# FACTORS INFLUENCING THE PERCEIVED TIMELINE TO ADOPT XBRL AMONGST PUBLIC LISTED COMPANIES IN MALAYSIA

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## ABSTRACT

Technology development has impacted the way businesses disseminate information to its stakeholders. eXtensible Business Reporting Language (XBRL) offers the ability to exchange business and financial information globally through a digitalized global standard language which is part of the global integrated reporting. There are limited studies on XBRL and enormous opportunities for further research globally, as well as in Malaysia. There have been studies on awareness and intention to adopt XBRL-based digital reporting, but no study has been conducted to understand the internal and external factors that would drive the perceived timeline to adopt XBRL amongst Public Listed Companies (PLC) in Malaysia. The goal of this study is in line with the Companies Commission of Malaysia (Suruhanjaya Syarikat Malaysia (SSM))'s intent to promote the voluntary adoption of XBRL in 2018 and upcoming mandates by other agencies. The proposed perceived timeline on XBRL adoption model was adapted from a previous study which represents an all-inclusive study at firm level as it combines the internal and external variables from the Diffusion of Innovations (DOI) Model, Technology, Organization and Environment (TOE) Framework (1990) and Iacovou et al. (1995) Model. The model was tested with data collected from 256 executives and managers of PLCs in Peninsular Malaysia. The findings of the study demonstrates that internal factors such as management characteristics (Management Innovativeness and Management Knowledge) and organisational characteristic (Internet Knowledge) along with external environmental factor (External Pressure) would influence the perceived timeline for XBRL adoption amongst Malaysian PLCs. The results support the current body of knowledge on the internal and external determinants influencing the perceived timeline of XBRL adoption and enable sufficient measures to be taken by authorities to increase the XBRL Adoption readiness amongst PLCs in Malaysia. The findings will prepare PLCs for a successful XBRL implementation before it is mandated in Malaysia.




**Keywords:** XBRL, global integrated reporting, technology adoption, Suruhanjaya Syarikat Malaysia (SSM), Public Listed Companies (PLCs).

## ABSTRAK

Perkembangan teknologi telah menukar cara penyebaran maklumat perniagaan kepada pemegang-pemegang saham. Bahasa Pelaporan Perniagaan eXtensible (eXtensible Business Reporting Language (XBRL)) menawarkan keupayaan untuk menyebarkan maklumat perniagaan dan kewangan di peringkat antarabangsa melalui bahasa global digital standard yang merupakan sebahagian daripada pelaporan bersepadu global. Oleh kerana kajian mengenai XBRL terhad, terdapat banyak peluang untuk penyelidikan lanjut di peringkat global serta di Malaysia. Terdapat kajian mengenai kesedaran dan hasrat penggunaan pelaporan berasaskan XBRL, tetapi tiada kajian dijalankan untuk memahami faktor dalaman dan luaran yang boleh mendorong jangkamasa yang dianggap sesuai untuk penggunaan XBRL dalam kalangan Syarikat Awam Tersenarai (PLC) di Malaysia. Matlamat kajian ini adalah sejajar dengan hasrat Suruhanjaya Syarikat Malaysia (SSM) untuk menggalakkan penggunaannya secara sukarela XBRL dalam tahun 2018 serta mandat yang akan datang dari agensi lain. Model cadangan jangkamasa penggunaan XBRL telah diubah suai daripada kajian terdahulu yang mewakili kajian menyeluruh yang terdiri daripada gabungan pemboleh ubah dalaman dan luaran dari Model Penyebaran Inovasi (Diffusion of Technology (DOI)), Rangka Kerja Teknologi, Pertubuhan dan Alam Sekitar (Technology, Organisation and Environment (TOE))(1990) dan Model Iacovou et al. (1995). Model ini telah diuji dengan data yang dikumpulkan daripada 256 orang eksekutif dan pengurus syarikat-syarikat awam tersenarai (PLCs) di Semenanjung Malaysia. Penemuan kajian menunjukkan bahawa faktor dalaman seperti ciri-ciri pengurusan (Pengurusan Inovatif dan Pengetahuan Pengurusan) dan ciri organisasi (Pengetahuan Internet) berserta dengan faktor persekitaran luaran (Tekanan Luar) akan mempengaruhi tempoh masa yang diambil untuk menggunakan XBRL dalam kalangan syarikat awam yang tersenarai di Malaysia. Hasil kajian ini menyokong pengetahuan terkini tentang penentu dalaman dan luaran yang akan mempengaruhi gambaran jangka masa penerimaan XBRL dan membolehkan langkah-langkah diambil oleh pihak berkuasa untuk meningkatkan kesediaan menggunakan XBRL dalam kalangan syarikat awam yang tersenarai di Malaysia. Penemuan ini juga akan membantu pengurusan syarikat awam yang tersenarai mempersiapkan kejayaaan pelaksanaan XBRL sebelum laporan XBRL dimandatkan di Malaysia.



**Kata kunci:** Bahasa Pelaporan Perniagaan eXtensible (eXtensible Business Reporting Language (XBRL)), laporan bersepadu global, penerimaan teknologi, Suruhanjaya Syarikat Malaysia (SSM), Syarikat Awam Tersenarai (PLCs)

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| | |
|---|---|
| ICT | Information and Communication Technology |
| XML | eXtensible Markup Language |
| PDF | Portable Document Format |
| XBRL | eXtensible Business Reporting Language |
| FpML | Financial products Markup Language |
| RIXML | Research Information Exchange Markup Language |
| ebXML | Electronic Business XML |
| GAAP | Generally Accepted Accounting Practices |
| IFRS | International Financial Reporting Standard |
| DM | Digital Malaysia |
| MDec | Malaysia Digital Economy Corporation |
| GNI | Gross National Income |
| CCM | Companies Commission Malaysia |
| SSM | Suruhanjaya Syarikat Malaysia |
| SDP II | Strategic Direction Plan II |
| PLC | Public Listed Company |
| MFRS | Malaysian Financial Reporting Standard |
| SECCOM | Securities Commission Malaysia |
| IRB | Inland Revenue Board |
| LHDN | Lembaga Hasil Dalam Negeri |
| PRS | Private Retirement Schemes |
| MIA | Malaysian Institute of Accountants |
| EDI | Electronic Data Interchange |
| SEC | Securities and Exchange Commission |
| USA | United States of America |
| HTML | HyperText Markup Language |
| TAM | Technology Acceptance Model |
| DOI | Diffusion of Innovation |
| TOE | Technological–Organizational–Environmental |
| TRA | Theory of Reasoned Action |
| TPB | Theory of Planned Behaviour |
| RA | Relative Advantage |
| PU | Perceived Usefulness |
| PEOU | Perceived Ease of Use |
| BI | Behavioral Intention |
| IOS | Inter-organizational systems |
| MI | Management Innovativeness |
| MK | Management Knowledge |
| CO | Cost |
| IK | Internet Knowledge |

| | |
|---|---|
| CM | Comparability |
| EP | External Pressure |
| ES | External Support |
| PTAX | Perceived Timeline to Adopt XBRL |
| CEO | Chief Executive Officer |
| CA | Chartered Accountants |
| SPSS | Statistical Package for Social Sciences |
| IV | Independent Variable |
| DV | Dependent Variable |
| DBA | Doctorate in Business Administration |
| PHD | Doctor of Philosophy |
| SDR | Studentized Deleted Residual |
| MD | Mahalanobis Distance |
| CD | Cook's Distance |
| KMO | Kaiser-Meyer-Olkin |
| PERS | Private Entity Reporting Standards |

# CHAPTER 1 INTRODUCTION

## 1.1 Background of the Study

According to Korpela, Montealegre and Poulymenakou (2003), Information and Communication Technology (ICT) greatly helps in generating value and creating eminence for the country, thus it can be positively associated to a country's economic development and opportunities. Korpela et al. (2003) added that innovation does not only enhances human capabilities but improves participation in many aspects of a community and drives economic growth through productivity gains. Most established countries have seen significant changes attributed by ICT over the last two decades as ICT leads to quick dissemination of information (Thioune, 2003).

ICT in Malaysia goes back to before the 21st-century era. Before the 1990's, computers, internet and mobile phones were not part of the mainstream business applications. In the 1990's, Malaysia still lacked in technology development to be in a position to compete in international markets in comparison with other developed countries.

The move to cultivate ICT started with the Vision 2020, which was a long-term vision initiated by Malaysia's former Prime Minister Tun Mahathir Mohammad for a sustained and productivity-driven growth. The vision would only be realizable when the labor force becomes fully equipped and technology savvy with the ability to think critically to fully participate in the economic and technological growth globally in the 21st-century and beyond.

Jehangir, Dominic, Naseebullah and Khan (2011) found that the Malaysian government launched its 9th Malaysian Plan from 2006-2010 to use ICT to boost the Malaysian economy as it was perceived to be a tactical catalyst in building a knowledge-based economy in Malaysia. In support of the plan, the Malaysian government has encouraged the replacement of conventional hardcopy and softcopy reporting such as in portable document format (PDF) with online reporting and other online methods of information interchange such as eXtensible Markup Language (XML) (Jehangir et al., 2011).

XBRL, an acronym for eXtensible Business Reporting Language for a digitalized international standard language which provides the capability to interchange business and financial information globally (Tarmidi & Roni, 2014). XBRL, an extension to XML was created for a standardized electronic exchange of financial and non-financial business data (Hoffman, 2006). XBRL has been specially designed to meet the challenging needs of business and financial reporting and hence, it is a sturdier and more flexible version of the XML language (Stergiaki, Stavropoulos & Lalou, 2013). The method businesses disseminate information to its stakeholders have been significantly impacted as a consequence of the fast advancement in technology.

XBRL is an open and standard language which is freely available for creating business reports. XBRL replaces XML standards for describing the trade and financial contents such as Financial products Markup Language (FpML), Research Information Exchange Markup (RIXML) and Electronic Business eXtensible Markup Language (ebXML).

XBRL ultimately provides for interoperability across all platforms and technologies to reach users in any part of the world (Pinsker, 2003). Enachi and Andone (2015) found that the usage of XBRL in financial reporting reduces information asymmetry that results from incompatible global reporting formats. Hence, it drastically allows easy recognition, analysis, processing and selection of data even though it is in different languages which are due to the application of various regulations.

The specific aim of XBRL is to permit a seamless stream of data through computers and thus enabling the distribution of data by the users to enhance the communication of financial and business information (Valentinetti & Rea, 2011). Standard internet page and published document make financial reporting appear as blocks of text. However, XBRL makes static data "interactive" and "intelligent." XBRL enables the usage of "descriptive data" (tags) which operates by adding "data about the data." Each part of the business information has contextual and comprehensive expressive information enveloping it making it readable by machines and at the same time available for analysis, storing, interchange with other computers and presentation to a variety of users.

Similar to a barcode system that offers exclusive identifiers for product information, an XBRL report would also include characteristics that describe that information in addition to the business and financial reporting information (Francis, 2012). Francis (2012) added that XBRL doesn't alter the information conveyed or the financial reporting standards but provides a standard, electronic arrangement for business

reporting by modifying the way trade and financial reporting is performed over the Internet.

With XBRL, each piece of business and financial data is grouped with unique identifying tags to provide information about the data and permit computers to communicate with one another without any human intervention. XBRL forms an online reporting convention to disseminate business and financial information with the use of customised tags. The standardized tag which is added to data would indicate a particular grouping or classification based on the nature of the data, such as "Non-Trade creditors."

With the addition of the nature of data, it makes the data understandable by humans while it remains computer readable. Tags could be added to the financial information to indicate if the data is monetary in nature or represents another sort of digital item which covers a particular financial period (Flowerday, Blundell & Solms, 2006). In XBRL, the glossary or dictionary which provides the definition and meaning of the various identifiers is called taxonomy (XBRL International 2007b).

XBRL labels are also useful to text data and not only to financial or numerical information making an organisations' specific principles, rules and procedures recognizable. Meanwhile, being an extensible form of the XML family, Higgins and Harrell (2003) added that XBRL can be tailored to adapt to the needs of different establishments and businesses.

The study by Baldwin, Brown and Trinkle (2006) demonstrated that XBRL would not only ease the communication but simplify the online disclosure of commercial statistics to consumers, forecasters and government agencies. The possible influences that XBRL is anticipated to have on the commercial data dissemination method and on its stakeholders were also addressed by the study by Baldwin et al. (2006).

The mission of XBRL is to standardize the financial reporting, lower the reporting costs and make the reporting as transparent as possible. XBRL has proven to have improved the accuracy, timeliness and usability of financial statements and business reporting data. Just as purer financial statements were produced with double-entry bookkeeping and enticed stakeholders, many experts believe that XBRL will revolutionize reporting in the coming era.

Lester (2007) in his study found that XBRL brings a significant and great potential in building an international principle that brings the connection between existing financial reporting gaps. The noteworthy participation at corporate, professional and governmental levels shows a big significant difference in the communication, sharing and analysis of information. Hence, due to this opportunity for financial transparency, it will transform corporate reporting. The study by Jones & Willis (2003) revealed that XBRL is not purposed to redefine accounting terms or take the place of current accounting standards.

Rather, the findings assist in defining the role of XBRL which is to offer global definitions for existing terms so that data on the Internet can be understood and read

by different analytical and reporting software without any human interferences and short of respect to the initiation of the system. The conclusion is that where business information is presented properly, web-based documents will unlikely be able to endure much longer as XBRL will represent the ideal business information presentation format.

XBRL is propagated by XBRL International, a global not for profit consortium of more than 750 companies and agencies globally which is operating in the public interest and currently responsible for the advancement of this futuristic technology. Due to its widespread global support, XBRL will enable these agencies to reduce the cost and speed in accessing and producing reports for search and analysis of data, both within a given country and globally. The purpose of XBRL International is to provide the open data exchange standard for business reporting to increase the accountability and transparency of business performance globally.



Similar to any language, XBRL represents Generally Accepted Accounting Practices (GAAP) and International Financial Reporting Standard (IFRS) without any modification. XBRL can contain both financial information such as income statements, balance sheets and cashflows and non-financial information such as performance measurements, credit requirements and statistics. XBRL was also created to support the needs of corporate reporting to all types of regulators, banks, government and tax agencies for the exchange and collection of data for analysis. Key Malaysian regulators started exploring XBRL since 2009 onwards because of its

ability to expedite, ease and improve the speed of gathering information and dissemination of financial information which would form the integrated reporting.

From the onset, XBRL has been reforming the business and financial reporting setting globally and would impact Malaysia in the same way once it is fully mandated by local regulators and adopted by companies stated Francis (2012). Francis added that the move to XBRL-based reporting would constitute part of the digital reporting chain and is in tandem with the strategies set by Digital Malaysia (DM) to transform Malaysia into a digital country by 2020.

DM has established an economy that is based on digital computing and information technologies to strengthen the citizens, businesses and the government of Malaysia by linking all of them. Spearheaded by Malaysia Digital Economy Corporation (MDec) and other agencies under the direction of the Minister of Communication and Multimedia, DM involves multi-facets with numerous parties and beneficiaries to aid automation and technology adoption to enhance workflow productivity and efficacy. As a result, DM has shaped an environment which supports the widespread use of ICT in all economic facets to enable real-time bonding amongst the global societies to not only boost productivity and the standard of living but to also raise the Gross National Income (GNI) of Malaysia (Digital Malaysia website).

In 2010, under its Strategic Direction Plan II (SDP II), SSM developed a five-year XBRL initiative which was to be carried out phase by phase, beginning with the

Public Listed Companies (PLC), their subsidiaries and non-listed public companies in Phase 1 and private limited companies in Phase 2. The aim of SSM's SDP II are:

1. To boost the accuracy and delivery of information;
2. To attain a uniformed and reliable means of reporting with improved diagnostic capabilities;
3. To stimulate data interchange and usability with external stakeholders.

As part of the suggested XBRL reporting format, a two-tier taxonomy has been established by SSM for companies in Malaysia. It includes a taxonomy using Malaysian Financial Reporting Standard (MFRS) for financial statements of public companies and its subsidiaries while Private Entity Reporting Standards (PERS) will be used for private companies. The MFRS taxonomy covers jointly controlled companies and associate of an entity which will come under the subjection of the rulings governed by the Securities Commission Malaysia (SECCOM) or Bank Negara Malaysia for the preparation and lodgement of financial statements.



The Registrar of Companies (Suruhanjaya Syarikat Malaysia) has been promoting the awareness and credence of XBRL as an acceptable format to be used throughout the nation of Malaysia. SSM has also been working on the building of extension taxonomies amongst the major government bodies which include SECCOM, Bursa Malaysia and Lembaga Hasil Dalam Negeri (LHDN) (Francis, 2012).

The usage of XBRL, which forms the basis of integrated reporting was further supported during the 2016 Integrated Reporting Conference organized by the

Malaysian Institute of Accountants (MIA). Malaysia's Deputy Trade Minister, Datuk Chua Tee Yong stressed that Integrated Reporting has a vital role to play in Malaysia's economic transformation to reach high-income status by 2020. He added that integrated reporting would "drive forward transparency and accountability, together with good governance" and ensure organizations thrive, generating sustained economic growth (Public Finance International Website).

Integrated Reporting could also act as a catalyst to spur the Malaysian economic development in the global arena by strengthening confidence in the Malaysian economy since it forms an open economy that is incredibly interwoven with the rest of the world. Therefore, it is clear that all financial and business stakeholders will need to understand the impact of XBRL adoption throughout these various organisations in Malaysia because XBRL is here and will be here to stay. The utility of XBRL goes beyond financial reporting, as it has shown to have a positive impact on the capital markets and national economy as a whole (Peng, Shon & Tan, 2014).

Many technologies have been created as Electronic Data Interchange (EDI) enablers to move data and information between systems and platforms since the inauguration of internet, posited Iacovou, Benbasat and Dexter (1995). The speed and content of information a company can gather help with greater efficiency and a more informed decision-making process, allowing them to obtain competitive advantage against its competitors.

However, due to lack of standardization, investors are forced to use their own systems to accumulate data from data providers with the need to copy and paste information manually into spreadsheets in a consistent manner to facilitate decision making. The lack of standardization has also led to information being stored in numerous formats for ease of use of various systems resulting in more time being used to produce information and preparing it for analysis.

XBRL facilitates Electronic data interchange (EDI) as it allows the exchange of structured business information electronically via separate computer applications between trading partners (Swatman & Swatman, 1992). By the essential features identified by Pfeiffer (1992), XBRL can be classified as an EDI. XBRL fulfils the following criteria's such as (1) there must be a minimum of two organisations within the same business context as users (2) data processing by independent application systems at two different organisations (3) the integrity of data exchange is guaranteed by XBRL Standards which governs the way data is coded and formatted and (4) XBRL facilitates data exchange between systems and platforms via the internet.

Similar to any EDI systems, XBRL will benefit regulators, agencies and its users through its widespread adoption and acceptance. Widespread adoption is required to promote effective transactions with all regulators, enable competitive analysis to be done amongst peer companies within the same industry and finally, to eliminate the license and operating costs of maintaining parallel systems that do not facilitate XBRL reporting.

Like any EDI-capable firms, the trade transactions costs will decrease for XBRL users as these companies will be able to eliminate redundant rekeying in of data as more companies become XBRL-enabled (Bouchard, 1993).

A theoretical model specific to diffusion of XBRL has been built with sufficient evaluation, communication and assimilation of the suitable factors identified based on technology implementation and dissemination of technology researches globally such as Rogers (1995) and Al-Rawashdeh (2011). The usage of XBRL will enable SSM and other regulators to harvest detailed data for industry analysis which can be supplied to stakeholders for industrial benchmarking, posited Francis (2012).

In 2015, SECCOM also announced on its website that XBRL would be executed gradually across the Malaysian Capital Market and the agency will be using XBRL as the medium for reporting starting in May 2015 for Private Retirement Schemes (PRS). Francis (2012) reported that Companies Commission Malaysia (CCM) or better known as Suruhanjaya Syarikat Malaysia (SSM) had initiated a plan to digitalize the financial reporting of companies using XBRL format in compliance with the guidelines provided by the Companies Act 1965 and the New Companies Bill.

## 1.2 Problem Statement

XBRL issues can generally be viewed from a least three perspectives which are from the users, preparers and policy maker's point of view. However, in line with Suruhanjaya Syarikat Malaysia (SSM)'s intent to promote the voluntary adoption amongst Public Listed Companies and the upcoming mandates by other government agencies, there is a need to identify the internal and external factors that influence the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia who will be the preparers of XBRL and assess the perceived timeline to adopt and use XBRL by Public Listed Companies' in accordance with the upcoming mandate. The focus is on the users as SSM expects the users to comply with the requirements to adopt the new technology for reporting by the set deadline which is yet to be announced.

Although XBRL has come into existence for almost 20 years to date, the awareness in Malaysia is still at a very preliminary state (Ilias, 2014) which would further delay the timeline to adopt XBRL. The low awareness is also a result of there not being a mandate to adopt XBRL per the findings of Troshani's in Australia, where there seem to be a "wait-and-see game" occurring within the XBRL initiators. Troshani and Rao (2007) found that there will be a reduced build up in regard to the demand for XBRL-enabled solutions if it not made mandatory to users as they will not be able to garner the benefit associated with the usage of XBRL.

SSM would like to motivate companies to adopt XBRL by encouraging a voluntary adoption of XBRL as the standard way of collection and dissemination of data instead

of waiting until the mandate is made, and a penalty is charged for non-adoption. Francis (2012) posited that the financial information in XBRL format was predicted to be executed on a voluntary basis starting in 2016 based on the proceeding at SSM and moving forward to be made obligatory at a date to be determined by the Registrar.

The study by Ilias and Ghani (2015) demonstrated that there was no XBRL implementation amongst local companies in Malaysia in 2015 due to there being no regulation made for the compulsory adoption of XBRL by the government or local regulators in Malaysia. Suruhanjaya Syarikat Malaysia (SSM) will be introducing a submission platform based on the eXtensible Business Reporting Language (XBRL) format in 2018 (Suruhanjaya Syarikat Malaysia website).

The MBRS Portal will be launched by SSM in the second quarter of 2018. Once launched, the company may submit, pre-populate the AR data and manage the company's dashboard via the portal. The MBRS system will be released in two stages where SSM will allow the stakeholders to download the MBRS Preparation Tool (mTool) for free during the MBRS Release 1, to achieve the following:

- To allow the public to sufficiently test the elements captured in the mTool displaying the reporting details of the AR, FS or EA;
- To allow the public to test and familiarized themselves with the functionalities and capabilities of the free mTool provided by SSM; and
- To ensure the public has sufficient time to attend the training programmes organized by SSM.

Based on SSM's website assessed on January 2018, the final set of taxonomies files including Taxonomy Guide will be made available along with Malaysian Business Reporting System Portal during the "Go Live" session during the second quarter of 2018. The regulator has also yet to release the mandate to collect financial information in XBRL format for Public Listed Companies in Malaysia.

Therefore, it is crucial to identify the internal and external factors that influence the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia in accordance with the upcoming mandate so that regulators and government agencies (XBRL initiators) will be able to undertake the necessary efforts to assist in expediting the perceived timeline for adoption amongst Public Listed Companies. The lack of XBRL capability amongst the Public Listed Companies' are very critical as they perform a vital role in the Malaysian economy. Therefore, the task to drive high adoption levels amongst Public Listed Companies' deserves paramount attention.



To facilitate the study to understand the internal and external factors that would influence the perceived timeline to adopt XBRL amongst Public Listed Companies, past empirical research for technology adoption at firm level has been analysed and an XBRL Adoption Perceived Timeline framework has been developed by way of the combination of a few theories for which the validity and reliability have been tested.

## 1.3 Research Questions

This research addresses the subsequent issues:

1. What is the influence of management characteristics (namely innovativeness and knowledge) as internal factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia?
2. What is the influence of organizational characteristics (namely cost and Internet knowledge) as internal factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia?
3. What is the influence of technological characteristics (namely compatibility and relative advantage) as external factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia?
4. What is the influence of environment characteristics (namely external pressure and external support) as external factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia?

## 1.4 Research Objectives

The motivation behind this research is to classify and determine the four major influences to the perceived timeline of XBRL adoption in Malaysia:

1. To examine the influence of management characteristics (namely innovativeness and knowledge) as internal factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.
2. To examine the influence of organizational characteristics (namely cost and Internet knowledge) as internal factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.
3. To examine the influence of technological characteristics (namely compatibility and relative advantage) as external factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.
4. To examine the influence of environment characteristics (namely external pressure and external support) as external factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.



## 1.5 Significance of the study

XBRL is a new reporting technology which constitutes the basis for global integrated reporting. There are very limited studies specific to XBRL globally as well as in Malaysia, as it is deliberated as a new area and there are still enormous areas for further research (Alles & Debreceny, 2012; Alles & Piechocki, 2012). Studies on awareness (Ilias, 2014), intention for re-use of data (Ilias, Razak & Razak, 2014), expectation of perceived benefit (Ilias, Razak & Rahman, 2015) diffusion of XBRL

innovation model (Al-Rawashdeh, 2011) and intention to adopt XBRL-based digital reporting (Ashari, 2010) has been conducted in Malaysia.

These researches provide some insight on the growth of XBRL, awareness on XBRL and perception of preparers on the advancement of XBRL amongst users but there has not been any study on the factors that would expedite the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia. Hence, a research in this area is very much due and would add to the limited literature on XBRL adoption (Rawashdeh, 2010).

In numerous occasions, the motivation for XBRL adoption globally arose from the mandate given by government and regulatory bodies. Based on Securities and Exchange Commission, a good example would be the case in the US, where reporting in XBRL was made obligatory from 2011 by the Securities and Exchange Commission. However, Steenkamp and Nel (2012) pointed one of the few instances where there is an opportunity to examine the scenario in South Africa, where the adoption of XBRL was not compulsory.

The XBRL adoption and filings in South Africa was done on a non-compulsion basis as it was not driven by mandatory requirements. The significance of this research is to explore the readiness and perceived timeline to adopt XBRL amongst the Public Listed Companies in Malaysia in line with SSM's intent to promote the voluntary adoption of XBRL adoption in 2018 for Public Listed Companies' and Security Commission's forthcoming mandate.

The conclusion of this study will aid the managers and leaders of Public Listed Companies as it will help identify ways to increase the readiness of their organisation and expedite the timeline to adopt XBRL in line with the upcoming mandate. It will also help regulators and government agency identify areas in which they can further drive the readiness speed up the perceived timeline to adopt XBRL amongst Public Listed Companies. This research would hence, aid in identifying areas that need exceptional focus internally within the organizations, external factors and potential external support which could be given to Public Listed Companies s to help boost the adoption rate in Malaysia.

This study will also provide potential insights that may be useful to the regulators that are looking to mandate XBRL as a method of reporting as it will help gauge the actual readiness and impact the timing of the mandate. This study will also help Public Listed Companies as they work on their initiatives for the upcoming mandates on the adoption of XBRL and trends. This research is also significant in explaining technology adoption in Malaysia and will add to the literature on innovation and technology adoption. Also, this study will also investigate the resistance to change phenomenon as posited by Steenkamp and Nel (2012).

This study will add to the theoretical contribution as the four lines of inquiry represented in this study, i.e. the influence of management characteristics, organization characteristics, technological characteristics and environmental characteristics on XBRL adoption readiness have not yet been integrated into a single study on technology adoption as such which has been undertaken in this study. The

literature from previous studies have been scrutinized and the gaps have been addressed within this research in regards to there being no studies conducted to analyze the factors influencing the the perceived timeline to adopt XBRL amongst Public Listed Companies in Malaysia.

### 1.6 Scope and Limitations of the Study

A sample of 274 companies out of 940 Public Listed Companies in Malaysia was used for the study based on the table for determining sample size for a finite population created by Krejcie & Morgan (1970). A sum of 548 questionnaires, which was double of the required sample size was distributed amongst the senior executives and managers of Public Listed Companies in Peninsular Malaysia to take into account the possibility of non-response and to ensure that the response is sufficient for the study. The unit of analysis was one person per Public Listed Company based on a random sampling method. Based on the 284 returned questionnaires, only 256 surveys were usable which represented 47% of the population. The study was carried out from February to October 2016. Thus, presents the response of companies during the period.

## 1.7 Organization of the Thesis

This dissertation is methodically arranged to include five chapters. Chapter 1 provides the contextual information about the study, deliberates on the problem of the study. Being the first chapter, it provides the context and states both the hypothetical and applied implications the significance of the study.

Chapter 2 discusses and explains the relevant and suitable literature relating to XBRL adoption studies. It also examines Theoretical background and Theories at firm level to support the topic of study.

In Chapter 3, the approach used for the study is elucidated and the definition of terms within the context of the study is determined. Matters regarding the research framework, the survey instruments, the sample used, the facts gathering methods and the methods of analysing the data are also defined in this chapter.



The results and exposition of the study are provided in Chapter 4. The findings of the study and the detailed analysis of the results in regard to the propositions tested are also presented in this chapter.

The final chapter provides the summary, inferences and acclamations of the study and provides the discussion, contribution and the limitations of the study along with the recommendation for forthcoming researches.

# CHAPTER 2 LITERATURE REVIEW

## 2.1 Introduction

An assessment of literature is provided in this chapter based on technology adoption and the evolution of XBRL introduction covering geographical landscape and key users of XBRL. The review is organised around the adoption studies, theoretical background and firm-based theories. These theories are expansively explained to create detailed knowledge of core theories underlying this research. This chapter also provides a review on the selected internal and external constructs consisting of management characteristics, organisational characteristics, technological characteristics and environmental characteristics.



## 2.2 XBRL Adoption Studies

XBRL, an acronym for eXtensible Business Reporting Language enables preparers to use a software to tag all business and financial information of their business reports to the elements within a taxonomy to enable the information to be validated between computers for EDI across the globe in a standardized manner. Since 2000, regulators across the globe have been advocating the pressing need to have a more modern financial reporting process that would provide additional information (i.e., mainly nonfinancial) to regulators on a timely manner per previous studies.

Similar to the Sarbanes-Oxley Act in the United States and the Corporation Act in Australia, regulators around the globe (including Malaysia) have also been requiring public companies to report information which are material more quickly than ever

before. Having the need to have the information being reported to the regulators being also publicly available, companies need to consider the adoption and consequential use of a technology such as XBRL that is proficient of continuous disclosure with the ability to work with the existing Enterprise Resource Planning (ERP) systems and stand-alone applications within the company to internally gather data and then having the capability to externally report the required information quickly and reliably; while complying with appropriate local statutory regulations and requirements.

Since the inception of XBRL almost two decades ago, there have been studies on XBRL which has examined XBRL from different perspectives and in various settings. Amongst the studies include Pinsker (2003) which probed the perception on XBRL amongst external and internal auditors in United States of America (USA) and study on the awareness of respondents prior to XBRL was adopted (Doolin & Troshani, 2005). There were also review of literatures relating to post adoption of XBRL (Baldwin et al., 2006), Nel and Steenkamp (2008) study on the level of awareness and understanding of XBRL among certified accountants and Doolin and Troshani (2007) and Premuroso and Bhattacharya (2008) study on the elements that drive XBRL implementation.

XBRL showcases new prospects in the integration of the financial information that flows within diverse communities of organization. As such, it shows a significance in the enrichment of business information supply chain and existing efficiency, transparency and accuracy problems are properly addressed.

However, XBRL standardization is proving to be challenging. (Troshani & Lymer, 2010) drew upon the actor-network theory where they monitored the artists that participated in the calibration of XBRL in Australia. Interviews and reviews of XBRL artefacts and relevant technical documentation was used to gather supporting qualitative pragmatic proof for the study. With the findings, the researchers confirmed the role of the artist in the standardization of XBRL in networks of varied artists. It is found that the inability to align between social, technical and strategic orientation can be disadvantageous to translation effectiveness and network stability and adversely affect calibration outcomes.

Findings by Liu and O'Farrell (2013) shows that the sub-cultural accounting values has an important responsibility in realizing values from XBRL adoption that gives a support for contingency theory. XBRL adoption has a positive effect on forecast accuracy that will be valuable to developers, regulators and most importantly, users of XBRL. Gostimir (2015) found that literature analysis demonstrated that XBRL is extensively recognized, used and applied all over the world, including in the European Union member states based on various types of implementation and usage vary from mandatory to voluntary and pilot projects.

There are also several studies in the past which have analysed the drivers that would affect the decision in embracing and adopting a certain discipline or technology (Doolin & Troshani, 2007; Pinsker & Wheeler, 2009; Bonson, Cortij & Escobar, 2009; Gray & Miller, 2009; Felden, 2011; Steenkamp & Nel, 2012; Henderson, Sheetz & Trinkle, 2011).

The effects that influence the goal and resolution to adopt technology in various scopes, organisation and environment were the areas which were stressed upon within these studies. Thus, yielding diverse outcomes as each study had varied research objectives to focus on in technology adoption coupled with different research methods.

Doolin and Troshani (2007) conducted an XBRL adoption study using a qualitative methodology to consult 27 XBRL members in a partly formal discussion to investigate on XBRL adoption. In contrast, Troshani and Rao (2007) conducted comprehensive interviews with four business executives who were also recognized as the preliminary adopters in the XBRL arena to explore XBRL during its early stages. There has been other research carried out using opinion polls to examine the execution of XBRL (Bonson et al., 2009; Gray & Miller, 2009; Felden, 2011; Steenkamp & Nel, 2012; Henderson et al., 2011).



XBRL enthusiasts have commended that the remarkable benefits that will be garnered as a result of XBRL implementation will be realized by all members along the information supply chain, which covers the prepares of the financial statements in companies, auditors, lenders, venture capitalist, regulatory bodies right up to accounting and finance researchers (Bergeron, 2003; Higgins & Harrell, 2003; Barton, 2003; Doolin & Troshani, 2007).

The usage of XBRL in companies will eradicate mistakes relating to human error during information tabulation and it will increase the eminence of the information

without having to transfer it manually as XBRL captures information between computers by having it presented in a format which is logical to computers as XBRL is not dependent on any software product and computer programmes. Hodge, Kennedy and Maines (2004) stated that XBRL users will be able to simplify the incorporation of information in their analytical tools via XBRL as disclosed in their study in USA.

With the ability to standardize, XBRL promotes and enables companies to compare themselves against their peers within the same sector. Per the findings of Nel and Steenkamp (2008), XBRL unravels complications of irregularities in the perspective of financial and business data between organisations. The usage of XBRL facilitates the use of search engines to collect additional financial reporting information and footnotes online compared to HyperText Markup Language (HTML) and PDF users (Hodge et al., 2004).



Hence, it entices and encourages foreign investment as it permits investors to access, consume and analyze business and financial data from financial statements regardless of language. Companies who have embedded their financial statements with XBRL information tags will have a higher probability of attracting the attention and obtaining a response from a larger group of forecasters'.

Finally, as XBRL adoption guarantees multiple uses for data, it has a higher likelihood to reduce the number of fruitless hours in trying to convert data for reuse, lower budgets and drive productivity. The usage of XBRL reduces the time taken for

processing information (Hodge et al., 2004). Companies will be in a better position to formulate various forms of reports with the usage of the same data such as statutory reports, management accounts, financial statements and tax reports which will be machine readable regardless of the computer and systems used. Thus, XBRL accelerates preparation of financial information with the ability to work on a real-time basis, promotes internal reporting and eases group consolidations.

XBRL will help regulators and government agencies reduce the cost associated with data gathering and compilation of information from businesses. XBRL will help encourage proper conduct amongst directors, secretaries, managers and other officers of companies to ensure all corporate and business activities are conducted in accordance with recognized standards of good corporate governance. XBRL also will help enhance and promote the supply of corporate information under the relevant laws and develop facilities to enable the commission to analyze and supply information to the public.



There are also XBRL literatures which provides findings of studies which scrutinized the relationship between the usage of XBRL and performance of preparers of information (Pinsker & Wheeler, 2009; Hodge et al., 2004; Ghani, Mara, Laswad, Tooley, & Jusoff, 2009; Ghani & Juzoff, 2009). Experimental based studies which have been carried out examined the various aspects which stimulate the usage of XBRL format. The studies include the ease in making investment decisions amongst consumers' via XBRL usage (Hodge et al., 2004), the selection in preferring the usage of XBRL, PDF and HTML driven by familiarity and work experience (Ghani &

Juzoff, 2009) and the making of decision using XBRL format (Pinsker & Wheeler, 2009).

There are also other studies which examined the utilization of HTML, PDF and XBRL that may be of potential association to the efficiency, preferences regarding investment decision making and hassle-free usage (Ghani et al., 2009). On the other hand, Janvrin, Pinsker and Mascha (2011) assesses the influence on choices of technology on non-professional investors' decision making.

The outcome of these studies recommends that participants who favored XBRL are more inclined to refer to the footnote information provided by XBRL which helps in making a better decision (Hodge et al., 2004). Ghani and Juzoff (2009) researches has shown that work knowledge and awareness are the major decisive factors in the selection and choices for the format of financial reporting used. In addition, Ghani et al. (2009) has provided verification that demonstrates the responding parties in the studies conducted had a preference to use other formats since they felt that every format provided a stress-free usage. Nonetheless, these studies were conducted based on an individual perspective level as well as in a non- Malaysian context.

From an organizational level, some studies have been performed to analyse the relationship between XBRL and organizational performance. The motivating features which influences technology acceptance such as relative advantage, management characteristics and pressure from external parties (Doolin & Troshani, 2005; Doolin & Troshani, 2007 and Troshani & Rao, 2007).

Bonson et al. (2009) undertook studies which focused on adoption which was influenced by the features of XBRL such as having a uniform taxonomy. The study by Felden (2011) suggested that the influence of social group and pressure from senior management or leadership were the driving forces in adopting XBRL while Henderson et al. (2011) found that complexity, compatibility, relative advantage, compatibility, and learning from exterior sources are the reasons that initiated the adoption of XBRL for internal usage.

The findings of studies amongst venture capitalists and analysts have disclosed that the implementation and usage of XBRL result in a reduced cost of obtaining information as XBRL format allows information to be used directly upon extraction without having the need to decipher, recapture or check manually. The available XBRL software's provides immediate data validation and highlights errors and gaps for improved data screening.



Since XBRL is presented in a standardized format, it enhances the ability to compare and analyze data. With the ability to consume data without human intervention, XBRL automatically improves the accuracy, integrity and facilitates automated analysis, leading to better and well-informed investment decisions. The findings from the study conducted by Pinsker and Wheeler (2009) proved that stockholders who practices XBRL reports are more effective in making precise decisions as contrasted to investors who make decisions based on paper-based financial information analysis which contains static data.

XBRL enables auditors to complete their tasks with a significant reduction in audit time, which would result in lower costs as XBRL facilitates uninterrupted auditing and allows for customized reporting without having to rekey in data. Thus, resulting in reduced audit fees with an ability to provide further value-added services to clients.

The existence of large databases is often relied upon by accounting and finance research for financial information. The development and maintenance of such databases causes increased disharmony between data formats and internet platforms. XBRL will enable the construction of larger scales of financial databases with improved functions while being more economical. Henceforth, more research will be facilitated with the help of XBRL as it drives operational efficiency in financial markets.

However, the findings of Doolin and Troshani, 2004, 2007 deliberated that the usage or adoption of XBRL are influenced by various factors and the different levels of XBRL adoption has led to the emergence of XBRL adoption studies on adopters. The results of the collective study of both the Technology Acceptance Model (TAM) and the theory of Diffusion of Innovation (DOI) on factors affecting the implementation of new technology advocates consistent involvement of attitude of users such as distinguished usefulness, perceived ease of use and perceived resources.

Lin (2003) concluded in four main effects that influences the prominent rate of XBRL adoption amongst companies in her study which comprised company size, performance, information, risk and ownership diversification. The efficiency and

effectiveness of XBRL from the perspective of users was further researched by Pinsker (2007). Pinsker's theoretical framework was based on Li, Park and Li (2004) IT model which covered Computer Mediated Communication Apprehension neighbourhood effect as well as Fichman (1992) IT adoption model which relates to Technology Acceptance Model and Absorptive Capacity.

Pinsker developed seven propositions using this framework which makes up of components such as level of computer mediated communication hesitation, perceived usefulness, attitude, absorptive capacity, level of education, alleged technological market leadership as well as external strains that influences the decision factor in adopting XBRL. Pinsker found that XBRL acceptance was heavily affected by usability and the ease of use.

Later, Premuroso and Bhattacharya (2008) suggested that there are five success factors that would drive the XBRL diffusion rate amongst companies which include company performance, corporate governance, liquidity, firm size, company performance and audit type. In the process of probing the perspectives of XBRL adopters', Ghani and Jusoff (2009) discovered that the factors that could severely cause distress and halt the adoption of XBRL include the format of disclosure, actual performance, accuracy and cognitive efforts.

The factors affecting the implementation of XBRL at organisational level was investigated by an online study conducted by Henderson et al. (2011) which was a culmination of two major elements from prior researches which include the

acceptance of data technology standards and complex information systems. Henderson et al. found that organizational, innovation and environmental factors affect user attitude in the adoption of any new technology. Henderson et al. also advocated that it is essential to realise both economic and social goals as XBRL gains rapid entry and growth globally.

In conclusion, based on the literature review from prior studies on XBRL, no study has been carried out to understand the drivers influencing the perceived timeline of XBRL adoption amongst Public Listed Companies in Malaysia. Therefore, there is a need to identify the internal and external factors that influence the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia who will be the preparers of XBRL and assess the perceived timeline to adopt and use XBRL by Public Listed Companies' in accordance with the upcoming mandate.



## 2.3 Influential factors on perceived timeline to adopt XBRL

In Malaysia, studies on XBRL awareness (Ilias, 2014), intention to adopt XBRL-based digital reporting (Ashari, 2010), diffusion of XBRL innovation model (Al-Rawashdeh, 2011), perception and usage expectation on XBRL (Ghani & Muhammad, 2014) and intention for re-use of data (Ilias, Razak & Razak, 2014), expectation of perceived benefit (Ilias, Razak & Rahman, 2015) has been performed. All the studies in Malaysia are theory based on the awareness as understanding on XBRL is still at a very premature phase in the country given that it has yet to be mandated by government agencies.

A study conducted by Ilias (2014) on the awareness of XBRL in Malaysia demonstrated that only few respondents were fully aware of XBRL. Furthermore, the findings of the study conducted by Ilias and Ghani (2015) demonstrated that there has not been any Public Listed Companies who have adopted XBRL on a voluntary basis in 2015.

Therefore, with thorough deliberations on all the research problems mentioned above together with the scarcity of researches on XBRL awareness, adoption intention, usage and factors impacting the adoption has motivated this study to examine the factors influencing the perceived timeline to adopt XBRL amongst Public Lister Companies in Malaysia, from the perspective of users and preparers of the XBRL format.

Prior empirical work on technology innovation has identified four groups of technology adoption determinants comprised within both the internal and external factors (Raymond, 2001; Thong, 1999). Internal factors include the characteristics of the management (decision makers) and characteristics of the organisation while external factors include technological characteristics and characteristics of the environment in which the company operates.

**Internal Factors**

**(1) Management characteristics**

Most research on technology adoption at organisation level has established the great influence of the CEO and management on the firm's innovativeness and decisions to

adopt technology as an internal factor (Thong, 1999). Management innovativeness, management knowledge on technology and attitude towards IT adoption were found to be the main determinants for technology adoption and extension by organisation. The decision to a continued usage of technology follows the initial acceptance decision and by preparers (adopters) advocated Kim, Chan and Chan (2007). For this study, management innovativeness and knowledge would be the main areas of consideration as part of the internal factors to determine the direct impact on technology adoption and the perceived timeline to adopt XBRL amongst Public listed Companies in Malaysia.

**(2) Organisational characteristics**

The studies by Thong (1999) also emphasized the significance of organizational predictors as the key determinants of technology adoption. Organizational characteristics include internal factors of the organization which has the capacity to either ease or confine any technology adoption. Besides the support from management, organization size and professionalism of the internet technology department has been found to be amongst the top predictors for the adoption of technology of an organization (Jeyaraj, Rottman & Lacity, 2006). Other drivers of technology adoption in an organisation include communication (Chong & Pervan, 2007; Raymond, 2001), nature of business (Raymond, 2001) and prior technology use (Kowtha & Choon, 2001). Brand and Huizingh (2008) along with Thong (1999, 2001) found that employee IT knowledge to be a significant independent variable which will provide a positive influence towards technology adoption.

On the other hand, studies carried out by Pfeiffer (1992) and Saunders and Clark (1992) identified several factors that inhibit EDI such as the complexity and cost of the technology, the need to modify internal systems, absence of technological skills and system integration would hugely impact local organisations regardless of its size. In line with that, Cragg and King (1993) also discovered that commercial costs were amongst the most essential aspects that hampers the development of IT in organisations. To add, Khatibi, Haque, Ismail and Al Mahmud (2007) found cost to be the other significant independent variable that influences technology adoption. Therefore, amongst all these organizational factors, the negative impact of cost and positive impact of internet knowledge of the organisation are the key concern of the current study as they posited to have a significant direct impact on the firms commitment to technology adoption and the perceived timeline to adopt XBRL amongst Public Listed Companies in Malaysia.



**External Factors**

(3) Technological characteristics

As part of the external factors, technological characteristics which form the most prevalent determinants of technology include compatibility, relative advantage, perceived usefulness, security, complexity and observability. The study by Khatibi et al. (2007) also demonstrated that security is one of the major barriers to technology adoption and electronic ecommerce in Malaysia. In Malaysian context, the primary influential factors in technology adoption include compatibility and relative advantage (Alam, Khatibi, Ahamad & Ismail, 2008). Therefore, compatibility and relative advantage has been found to be the main areas of consideration for research of this

study, to form part of the external factors which influence the perceive timeline for technology adoption amongst Public Listed Companies in Malaysia.

(4) Environmental characteristics

Besides technological characteristics, external environmental characteristics has been stressed to be an important area in previous studies in regard to technology adoption. Environmental factors relate to those factors which are inherent or beyond the control of any organisation but affect the way organisations run their businesses within a particular industry. The studies conducted by Jeyaraj et al. (2006), demonstrated that amongst the crucial predictors of technology adoption include external information sources and expertise along with external pressure. In an empirical study to test factors for technology adoption performed by Al-Qirim (2005) found that companies would adopt technology for the mere reason to compete more effectively within their industry. On the other hand, Thong (2001) found that external support to be an important driver for a successful technology implementation and adoption amongst SMEs in Singapore. Therefore, in the context of this study, external pressure and support has been the main areas of consideration to test their influence on the perceived timeline to adopt XBRL amongst Public Listed Companies in Malaysia.

## 2.4 Theoretical Background

Considering the limited studies on the awareness and acceptance of XBRL adoption in Malaysia, there is a need for a suitable theoretical model to identify the features from both interior and exterior settings that influence the XBRL adoption by Public Listed Companies in Malaysia. The theoretical model will help in the assessment of

the readiness to adopt and use XBRL amongst Public Listed Companies by the upcoming mandate. Researchers believed that is it imperative to develop a model to accurately describe the factors influencing the perceived timeline for adoption of information technology.

The studies carried out by Benbasat and Zmud (1999) and Venkatesh, Morris, Davis and Davis (2003) showed that technology acceptance and implementation are crucial topics of research. To improve the capability to understand and predict the level of technology acceptance, various models and frameworks have been taken from other streams, altered and validated over a period (Benbasat & Zmud, 1999; Venkatesh et al., 2003).

The theories that has been developed, tested variables that influences technology adoption and acceptance research since the 70's includes Technological–Organizational–Environmental (TOE) framework (Tornatzky & Fleischer, 1990) and Diffusion of Innovation (DOI) (Rogers, 1995) which tested variables at firm level while Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1977), Theory of Planned Behaviour (TPB) (Ajzen & Madden, 1986) and Technology Acceptance Model (TAM) (Davis 1989; Davis, Bagozzi and Warshaw, 1989) are theories and framework which tested variables at individual level.

Past researches have also used a combination of intentions, theories of innovations and notions from the Theory of Reasoned Action (TRA) (Moore & Benbasat, 1991), the perceived attributes of innovations (Rogers, 1995) and the Theory of Planned

Behavior (TPB) by Taylor and Todd (1995) to study on the determinants of technology adoption. However, these relate to individual based theories and would not apply when the unit of analysis relates to organizational or firm based.

The validity and authenticity of these frameworks and concepts have been tested by several researchers and further integrated, modified and expanded according to the researchers' perception to fit the research requirement, specification and sample characteristics, where the application is skewed towards investigations in their respective research areas.

The strengths and weaknesses of the diffusion and adoption models and theories based on the adopters' perspective has motivated subsequent researchers to propose enhanced models combining two or three theories to analyze technology acceptance and adoption. As this study concentrates on examining the internal and external factors influencing the perceived timeline to adopt XBRL amongst Public Listed Companies in Malaysia at firm level, the literature on theories at firm level will be examined in the next section of the literature review as part of the steps in developing a suitable theoretical model.

## 2.5 Theories at Firm level

### 2.5.1 Diffusion of Innovation (DOI)

The oldest social science Diffusion of Innovation (DOI) Theory developed by Rogers (1962), describes the spread of an idea, behavior or product through a specific population or social context (Roger, 1995). DOI is a theory which measures the method and speed at which fresh concepts and technology operating at both the organizational and individual level are spread through cultures.

There are also phases through which innovation is adopted and diffusion accomplished right from the stage where awareness of the need for innovation to decision to adopt leading to the initial test of the innovation and finally to the continued use of the innovation.



The findings of the study by Rogers (1995) showed that the inclination to accept inventions at individual level varies by dissimilar levels, thus all observations on technology acceptance typically result in a normally distributed population over time. Rogers (1995) further worked on categorizing the individuals by different segments, the normal distribution is broken down into five categories of individual innovativeness from those who start adopting technology at the soonest and to the latest adopters which have been named as laggards, early adopters, late majority, early majority and innovators.

The analysis done by Bhattacherjee (2001) demonstrated that although the earlier acceptors contrasted from later adopters on certain dimensions such as

innovativeness, such differences do not appear to influence their continuance perceptions significantly. The Diffusion of Innovations Theory (Rogers, 1995) has already been used to examine extensive series of occurrences of technology adoption along with numerous elements presumed to be drivers of information technology adoption within the users.

The research studies reviewed above identify the characteristics of early adopters which differs from those who choose to adopt later. These findings help to comprehend the characteristics of the target population to ensure the right population is targeted who will fuel the diffusion rather than hinder. Different strategies can be used to appeal to the characteristics of adopters once identified. The characteristics of early adopters can be classified into five categories as shown in Table 2. 1.

Table 2.1
*Characteristics of Early Adopters*

| Category | Characteristics |
|---|---|
| Innovators | - Risk takers and advent<br>- First to try and develop new ideas<br>- Not much action or strategies required to appeal to this crowd |
| Early Adopters | - Mostly thought leaders and enjoy being leaders<br>- Embrace change as opportunities and are comfortable adopting new ideas<br>- Prefer manuals and information sheets on implementation<br>- Don't need to be convince to adopt new technologies. |
| Late Majority | - Contemptuous group who adopts only after verified by majority<br>- Strategy to influence would be to provide information on the number of people who have adopted successfully |
| Laggards | - Stiff, conventional and bound by tradition<br>- Extremely cynical and resistant to change<br>- Results and force from earlier adopters would drive adoption |

Source: Rogers (1995)

Besides the characteristics and category of adopters, there are five main factors that influences the level of adoption and varies at different degrees within the five adopter categories. The factors and their respective characteristics are as follows:

1. Relative Advantage (RA) – The standard of when an innovation is perceived to be better than the previous idea, technology or product.
2. Compatibility – The amount of uniformity of the innovation is with the standard, involvements and requirements of the potential adopters.
3. Complexity – The challenge for the innovation to be understood and used.
4. Triability – The degree to which the innovation can be tested and investigated before the choice to adopt is made.
5. Observability - The level at which the innovation produces results.



According to DOI framework developed by Rogers (1995) which is tested at corporate level, innovativeness is associated to factors like attributes relating to a particular leader, the features of the internal organizational structure and exterior organizational characteristics as depicted in Figure 2.1. The characteristics of a leader which is portrayed via the attribute of the individual towards change while the internal organization structure relates to the extent to which control and power in a structure are dominated by a handful of individuals within the organization.

The high degree of knowledge and the level of expertise of the members within an organization is known as the intricacy while formalization is the extent to which a firm encourages the members within its organization members' following guidelines and processes. Interconnectedness is the degree in which the units in a social system

are meshed by relational linkages where the availability of indifferent resources is referred to as organizational slack and size relates to the number of employees of the organization. The level of openness of the system indicated the external characteristics of an organization.

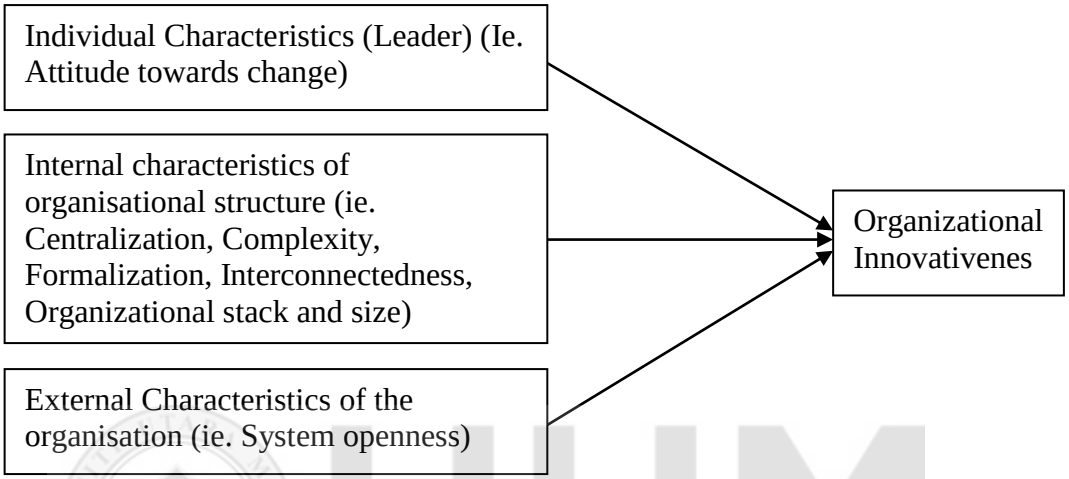


Figure 2.1
*Diffusion of innovations (DOI) Model (Rogers, 1995)*

### 2.5.2 Technological–Organizational–Environmental (TOE) framework

Tornatzky and Fleischer in 1990 developed the Technological Organizational Environmental (TOE) framework which highlights the three factors that effect the procedure by which organizations adopts a technological innovation. The three aspects include technological, organizational and environmental context. The TOE framework which is used in various IT adoption studies delivers a beneficial diagnostic framework as was originally presented and later adapted which can be utilized in technology adoption studies and for integration of various forms of IT innovation as discovered by Oliveira and Martins (2011).

Technological context covers both the internal practices as well as external technologies pertinent to the firm. The organizational context covers organizational details such as size, scope, and managerial structure while the Environmental context covers all factors surrounding the firm such as the industry the firm is involved in, its competitors and the government (Tornatzky & Fleischer, 1990).

Tornatzky's research helps provide an understanding of the implementation of inter-organizational IT and could provide practical connotations to encourage adoption of XBRL, as emerging technologies, such as XBRL can be adopted for internal and external purpose.

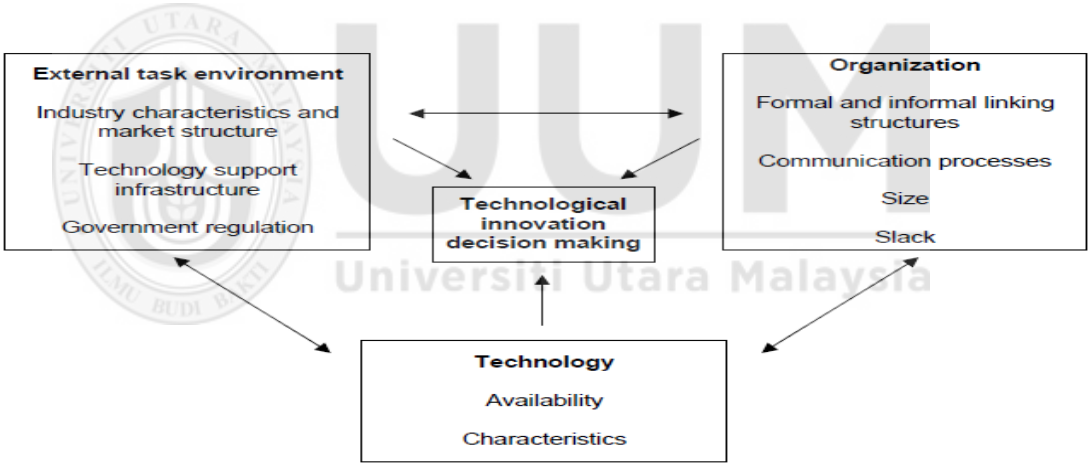


Figure 2.2
*Technology, Organization and Environment Framework (TOE) Model (Tornatzky & Fleischer, 1990)*

### 2.5.3 Iacovou et al. Adoption of Innovation Model

Dynamics that drive firms to accept IT innovation of Inter-organizational systems (IOSs) in the context of EDI implementation was researched by Iacovou, Benbasat and Dexter (1995). The model developed by Iacovou et al. which is based on perceived benefits, organizational readiness and external pressure is suitable to describe the adoption of IOSs. The perceived benefits covered by Iacovou et al. is different from that which is covered within the TOE framework, whereas the organizational readiness within the Iacovou et al. model is an amalgamation of the organization and technology perspective adapted from the TOE framework.

The IT resources speak about technology setting and while the organizational setting is covered by the financial resources. The Iacovou et al. (1995) framework describes external pressure with the inclusion of transaction associated to the external environmental context of the TOE framework in the precarious part of IOS adoptions, as demonstrated by the model in Figure 2.3 below.

The TOE framework and the Iacovou et al. (1995) model was used by Oliveira and Martins (2011) to expound and contrast the effect on the acceptance of online businesses by organizations across the telecommunications and tourism industries within the European Union (EU) countries.

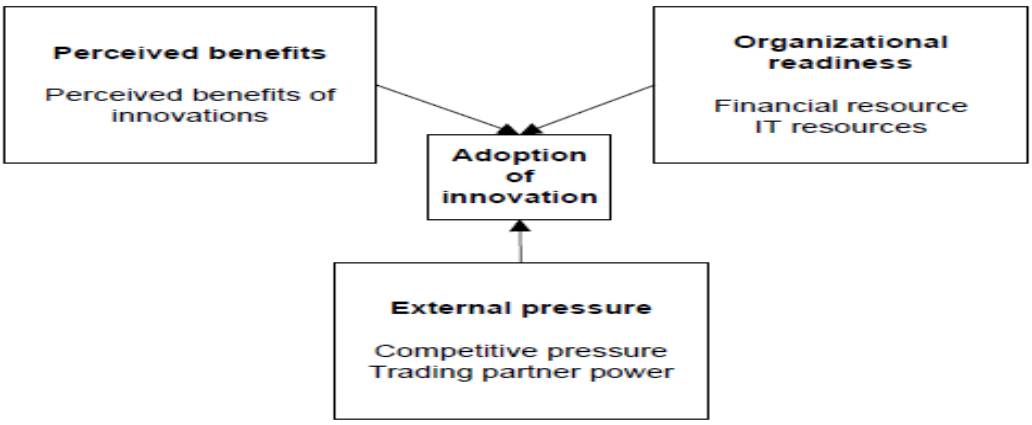


Figure 2.3
*Iacovou et al. Adoption of Innovation Model (1995)*

## 2.6 Conclusion

Based on literature review performed and analysis of the three firm level theories, it is apparent that both internal and external aspects has a crucial role in driving the acceptance of technology and influencing the perceived timeline to adopt XBRL.

In summary, the research framework development would encompass the combination of the three firm-based theories reviewed above, which is the DOI, TOE and Iacovou model. The internal management innovativeness coupled with knowledge and organisational characteristics (namely internet knowledge and cost in the form of organisation slack or indifference in resources) can be substantiated from DOI framework developed by Rogers (1995) which tested the innovativeness of a leader and internal organizational characteristics. The external support and technology readiness is supported by the Tornatzky & Fleischer (1990) framework while organizational readiness and external pressure was taken from the Iacovou et al. (1995) model.

A similar model was used by the study done by Ramayah, T., Ling, N., Taghizadeh, S., & Rahman, S. (2016) on factors influencing SMEs website continuance intention in Malaysia, which is a combination of internal and external variables from all the theoretical models mentioned above, namely the Diffusion of innovations (DOI) Model, Technology, Organization and Environment (TOE) Framework (1990) and Iacovou et al. (1995) Model, to provide an all-inclusive study at firm level.

Considering the slow acceptance of XBRL adoption Malaysia, this research would help to identify the areas that need special focus. The research framework based on the literature review above that were used to study the factors influencing the perceived timeline to adopt XBRL by Public Listed Companies in Malaysia is explained in Chapter 3.2.

# CHAPTER 3 RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter is organized around nine main sections. These sections cover aspects of Research Framework, Elaboration of the Hypotheses used for the study, Research Design and Operational Definition, Measurement of Variables/ Instrumentation, Data Collection, Sampling, Data Collection Procedures and Techniques of Data Analysis.

## 3.2 Research Framework

The formulation of the conceptual framework of this research comprises elements from various models within information system space to offer imminent perceptions to realize and identify the various phases of XBRL diffusion.

Taylor and Todd (1995) highlighted a successful model is one which is parsimonious coupled with the capability to deliver accurate forecasts and achieve the set anticipations. The model should also contain predictive ability to contribute towards understanding the occurrence within an investigative study. During the formulation of the conceptual model for the study, the second principle was also considered because dissemination of XBRL information necessitates analytical ability while providing a point of view on the technology.

The proposed conceptual model for this research was adapted from the model used by the study performed by Ramayah et al. (2016) on factors influencing SMEs website continuance intention in Malaysia, which is a combination of internal and external

variables from all the theoretical models mentioned above, namely the Diffusion of innovations (DOI) Model, Technology, Organization and Environment (TOE) Framework (1990) and Iacovou et al. (1995) Model, to provide an all-inclusive study at firm level.

Management innovativeness relate to the individual characteristics of the leader or management team and Organisation characteristics was taken from the DOI model. This was further complimented with the Internal Characteristics of the Organisation, External Environment and Technology from TOE Framework. The framework was further strengthened by Perceived benefits regarding Relative Advantage, Cost as part of the Organisational Readiness and External Pressure to measure the perceived timeline to adopt XBRL from Iacovou et al. Model.

Therefore, the implementation mechanism has been summarized in the proposed model to demonstrate that perceived timeline to adopt XBRL and readiness is determined by four main factors from both external and internal to the organization. The internal factors include (1) Management Characteristics and (2) Organisational Characteristics which relates to the heterogeneous characteristics of Public Listed Companies, while external factors include (3) Technological characteristics and (4) Environmental characteristics. This model is deduced to understand the factors influencing the perceived timeline to adopt XBRL amongst Public Listed Companies. The conceptual model used in this research is presented in Figure 3.1.

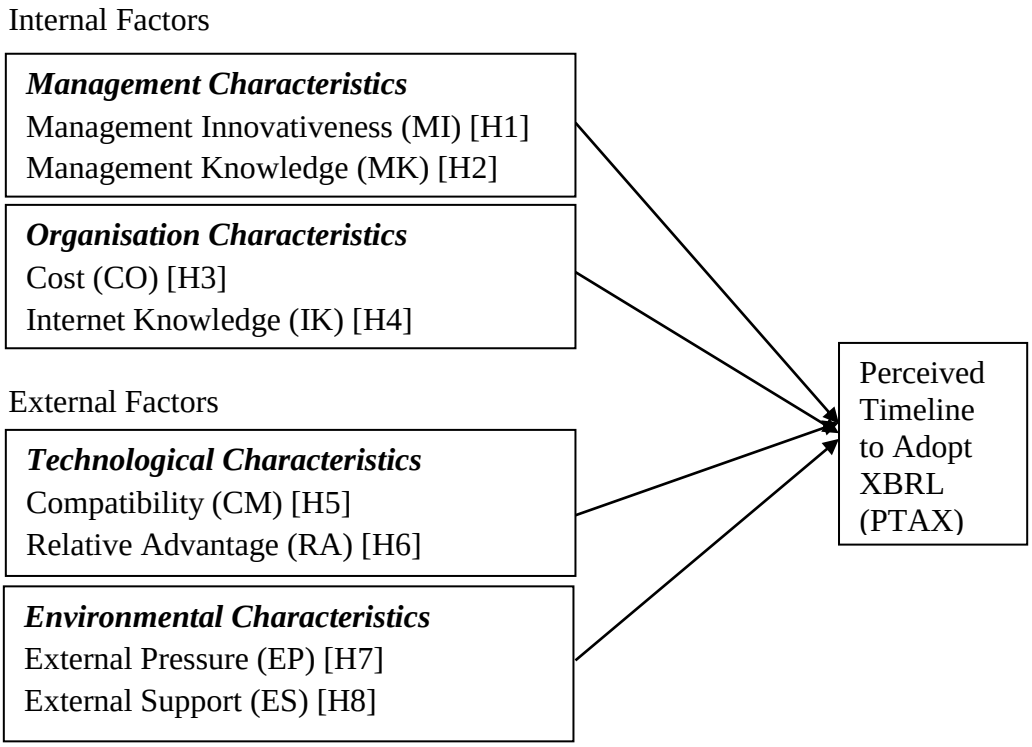


Figure 3.1
*Research Framework on Perceived Timeline to adopt XBRL*

### 3.3 Hypotheses Development

This section presents the hypotheses that will be investigated in this research. These eight hypotheses were developed on the objectives of the study and supported by the research framework (Figure 3.1). These eight hypotheses are based on the direct relations between the independent variables and dependent variables.

#### 3.3.1 Management Characteristics

Management characteristics as an internal factor influencing XBRL Adoption Perceived Timeline are measured by Management Innovativeness (MI) and Management Knowledge (MK).

#### 3.3.1.1 Management Innovativeness and Perceived Timeline to adopt XBRL

Management innovativeness has been found to have a constructive role in the adoption of innovation over the last few years (Thong & Yap, 1995; Thong, 1999; Jantan et al., 2001; Al-Qirim, 2005; Hussein, Karim, Mohamed & Ahlan, 2007). In Malaysia, Jantan, Ramayah, Ismail and Hikmat (2001) further authenticated the noteworthy role of the Chief Executive Officer (CEO)'s innovative mindset influences the entire management and company as whole. Thus, the management innovativeness was linked to the extent of adoption of technology in Malaysian companies. Apart from being innovative, CEOs and management of companies are generally risk-takers and are responsive towards new technology as they see things different perspectives.

Thus, management who are more innovative, will be willing to allocate funds and resources for new technologies, added Jantan et al. (2001). Therefore, commitment and response from an innovative management team are of prime importance to the technology adoption of any organizations. Therefore, the following hypotheses were developed:

**H1:** Organisation with a higher Management Innovativeness (MI) will have a positive influence on the perceived timeline to adopt XBRL.

### 3.3.1.2 Management Knowledge and Perceived Timeline to adopt XBRL

The existing literatures have well endorsed that knowledge is the driver and source for innovation and performance (Leonard-Barton, 1995). Companies with management who possess a higher level of technological knowledge and awareness normally allocates resources for technology adoption because they can see the long-term advantages of online reporting. Thus, a management with an extensive IT knowledge is important for a continuous provision of considerable noteworthy funding for technological investment. If the potential of an innovation adoption is not known, then it is not likely for the adopters to prepare themselves for the upcoming directive from authorities' due to the absence of the perceived needs.

The study undertaken by Rogers (1995) showed that the adoption rate of an innovation is affected by the lack of knowledge and awareness regarding that innovation and its benefits. The lack of knowledge and awareness amongst management lowers the prospect of adopting innovation, hence the following hypotheses was developed:

**H2:** Organisation with a higher Management Knowledge (MK) has a positive influence on the perceived timeline to adopt XBRL.

### 3.3.2 Organization Characteristics

Organization characteristics as an internal factor influencing the perceived timeline to adopt XBRL is measured by Cost (CO) and Internet Knowledge (IK).

#### 3.3.2.1 Cost and Perceived Timeline to adopt XBRL

Organizations who are ready for adoption are those who are prepared with the necessary cost and budget for sufficient employees to cater to the needs of the adoption before the mandate is made by regulators. The findings from the study conducted by Saunders and Clark (1992) demonstrated that the level of preparedness of an organization is about the monetary and technical resources of the firm as most organizations express concerns on costs of investments.

In this study, the cost of adoption includes the cost of adoption, maintenance and training (Karanasios & Burgess, 2006). Premkumar and Roberts (1999) found that technologies that are perceived to be low in cost are more likely to be adopted by companies. In view of this, it is posited that public listed companies would likely be ready to adopt when cost of the technology is low. With that, the third hypotheses was developed:

**H3:** Cost (CO) will negatively influence the perceived timeline to adopt XBRL.



#### 3.3.2.2 Internet Knowledge and Perceived Timeline to adopt XBRL

Being a language powered by internet connections to form a network between systems, the essential knowledge of Internet and ease of use would pose an impact on the perceived timeline to adopt XBRL (Eastin & Larose, 2000; Daugherty, Gangadharbatla & Eastin, 2009). Romijn and Albaladejo (2002) posited that innovation capability comes from internal sources such as the skillset of workforce as

well as from external sources such as networking. Thus, a sound internet knowledge amongst XBRL preparers would lead to a higher tendency to adopt the XBRL.

However, users in PLCs is more inclined to stereotypically lack basic internet knowledge. Therefore, organizational internet knowledge is one of the crucial factors necessary for any successful technology adoption, hence it leads to the following hypotheses:

**H4**: Organisations with higher Internet Knowledge (IK) has a positive influence on the perceived timeline to adopt XBRL.

### 3.3.3 Technological Characteristics

Technological characteristics as an external factor influencing XBRL Adoption Perceived Timeline is measured by Compatibility (CM) and Relative Advantage (RA).



#### 3.3.3.1 Compatibility and Perceived Timeline to adopt XBRL

In this study, compatibility refers to the technology which is perceived as being consistent with the existing values, past experiences and needs of the public listed companies (Chong, 2004) and has been statistically validated to be a significant factor affecting technology adoption. Therefore, the more a technology is perceived consistent with the values, beliefs and business needs, more likely the technology would be adopted.

Compatibility is a popular factor affecting technology adoption that has been tested by a number or researchers in different context geographically (Premkumar et al., 1994; Thong, 1999; Chong, 2004 and Al-Qirim, 2005). Based on the Diffusion of Innovation (DOI) framework developed by Rogers (1995), Compatibility is defined to be the amount of uniformity of the innovation is with the standard, involvements and requirements of the potential adopters. Thus, the following was hypothesized:

**H5:** Compatibility (CM) of XBRL adoption with the values, beliefs and business needs of Public Listed Companies will positively impact the perceived timeline to adopt XBRL.

#### 3.3.3.2 Relative Advantage and Perceived Timeline to adopt XBRL

Relative advantage in this study is defined as the degree to which a technological factor brings bigger advantage to the business. It relates to both the direct and indirect benefits a technology adoption will bring to the public listed company. The positive association of relative advantage of technology adoption has been revealed to be consistent in previous studies (Premkumar & Roberts, 1999). The study carried out by Chong and Pervan (2007) demonstrated that relative advantage appeared to have significant impact on the extend of technology deployment in Australia. Hence, the greater the Relative Advantage (RA) of using XBRL, the bigger possibility it is that the XBRL will be adopted by Public Listed Companies. This points to the next hypothesis:

**H6:** The higher the Relative Advantage (RA), the more positive influence on the perceived timeline to adopt XBRL.

### 3.3.4 Environmental Characteristics

Environmental characteristics as an external factor influencing XBRL adoption readiness is measured by External Pressure (EP) and External XBRL Support (ES).

#### 3.3.4.1 External Pressure and Perceived Timeline to adopt XBRL

In this study, external pressure refers to the push factors from the external environment of the organisation such as from competitors, trading partners and government regulation. The main sources of pressure relating to technology adoption are competition, social factor and interdependency between companies within the same industry besides the government regulations (Iacovou et al., 1995). Competitive pressure denotes the level of proficiency for information interchange between competitors within an industry.



Hart and Saunders (1997) posited that amongst the extremely precarious causes for innovation adoption is the burden from merchandising allies. Research carried out by Bouchard (1993) suggests that the decision by a firm to adopt an innovation does not merely rely on the features of the innovation but is largely centred around the actions and activities of its merchandising allies and peer companies. Bouchard added that, the strongest explanatory variable influencing the adoption rate of any technology in organisation is the external pressure from government regulation.

The more competitors and trading partners become XBRL enabled, there will be a higher inclination to adopt XBRL amongst Public Listed Companies to maintain their own competitive position. Likewise, the perceived dependency on the local government regulations places a significant influence on Public Listed Companies and leads to the likelihood of adoption amongst Public Listed Companies. Thus, the following hypothesis was developed:

**H7:** There is a positive relationship between External Pressure (EP) and perceived timeline to adopt XBRL.

### 3.3.4.2 External XBRL Support and Perceived Timeline to adopt XBRL

External support in this study refers to the support from external entities such as the regulators and government agencies (ie. SECCOM, SSM, Bursa Malaysia, LHDN) vendors, professional bodies, academicians or consultants to embark upon the implementation of technologies (Thong, 1999). The support includes sharing of knowledge via awareness sessions, trainings and other technical assistance.

As an example, companies have benefitted from the XBRL Roadshows that has been jointly conducted by Malaysian Institute of Accountants and SSM to create awareness on XBRL amongst senior finance personals. Public Listed Companies also typically would prefer to use hosted applications through an application service provider because of the inadequacy of resources like internal IT and XBRL subject matter experts. Governments can provide a positive enabling environment in which technology adoption can realize its full potential, as one of the most powerful role of

the government is to encourage and educate on the advantages of technology adoption. With that, the following Hypothesis was created:

**H8:** There is a positive relationship between External XBRL Support (ES) and perceived timeline to adopt XBRL.

### 3.4 Research Design

Being a new technology adoption study, this research tests hypotheses using a cross-sectional field survey (positivist design) with data which was collected during one period. Similar to other positivist designs which is deductive in nature, the study starts with theory and ends with testing via a field survey to search for universal patterns based on an unbiased view of actuality. Thus, a quantitative research approach employed using structured questionnaire as the main source of the research instrument.



This study tested the relationship between the internal and external determinants of technology adoption and the perceived timeline to adopt XBRL amongst the business and finance stakeholders of Public Listed Companies in Malaysia. This cross-sectional study identified the push factors that would encourage the adoption and prepare Public Listed Companies towards a successful XBRL adoption.

Therefore, the exploration outline for this study was created to assess the perceived timeline to adopt and use XBRL by Public Listed Companies by the upcoming mandate. Observations of network technologies and related technologies coupled with perceived fabricated pressures exert a positive substantial impact on XBRL

implementation and facilitate the usage of XBRL despite there being controls put in place to moderate the implications of the SEC mandate (Henderson et al., 2011).

The study was conducted in four phases. In the first phase, the questionnaire was sent to eight experts from the technology and innovation area who are business analysts and consultants to get their opinion on the questionnaire items (face validation).

The second phase was a pre-test to ensure the content validity of the research instrument. In this phase, three managers and three executives from the Finance and IT Departments of Public Listed Companies in Klang Valley were chosen for the interview and their feedback were incorporated into the research instrument. The third phase was pilot test using 30 samples to test the reliability of scale by measuring internal consistency of the constructs through Cronbach‟s alpha. And the last phase was the main study using the revised instrument to collect the required data to examine the relationship among variables.

## 3.5 Operational Definition

In order to avoid any potential confusion in the interpretation of the concepts employed in this study, the definition of terminologies used in this research are presented below.

### 3.5.1 Management Characteristics

#### 3.5.1.1 Management Innovativeness

Management innovativeness was operationalized by measuring levels of Chief Executive Officers (CEO) and management innovativeness. Management innovativeness refers to ability of managers to adopt new ideas and technology and innovate to keep their organizations capable and ready for the changes taking place around them and in the industry. The CEO and management are normally the driving force of the company. Management innovativeness will be used to support the positive relationship between management innovativeness and XBRL adoption perceived timeline.

The management innovativeness is measured using six items which are original ideas, stimulating management, management coping with several new ideas at the same time, management having fresh perspective on old problems, management prefers to create something new rather than improve something and Management being open to new technologies. Refer to Appendix for Questionnaire – Section B: Factors Influencing XBRL Adoption Timeline.

Studies by Thong & Yap (1995) discovered that companies with IT conversant CEOs and management are more inclined to adopt IT. In Singapore, Thong (1999) hypothesized that management innovativeness corresponded to the IS adoption in a positive manner while in Malaysia, Hussein et al. (2007) affirmed that managerial IT knowledge directly and undoubtedly influence the success of IS implementation. Studies have shown that perceived desirability, perceived feasibility and propensity to act influences the intention towards acting as posited by Krueger and Carsrud (1993). Likewise, Al-Qirim (2005) in his research concluded that CEO and management innovativeness is associated to technologies such as EDI, extranet, intranet and sites which are over the internet among companies in New Zealand.

### 3.5.1.2 Management Knowledge

Management knowledge refers to the knowledge of the Chief Executive Officers (CEO) and management on XBRL and technology adoption as it will impact the perceived timeline to adopt XBRL in a positive manner because knowledge leads to acceptance of technology. Thong & Yap (1995) asserted that companies have a higher chance to adopt an internet technology when the company's CEOs possess more IT knowledge.

The study done by Zhu, Kraemer and Xu (2006) and Oliveira and Martins (2011) proved that the preparedness to adopt an application would significantly depend on the prevailing structure within an organization and the aptitude of the technology team to grasp and be ready to implement innovative tools.

The Management Knowledge is measured using six items which include, I would rate my own/ Management understanding of technologies as very good compared to other people in similar positions, I have/ Management have formal qualifications in XBRL (attended workshop or training on XBRL), XBRL increases the productivity of employees, My employees find XBRL easy to use for reporting and decision-making, I have/ Management has seen what other global Public Listed Companies have achieved with XBRL and XBRL makes financial information easier to analyse. Refer to Appendix for Questionnaire – Section B: Factors Influencing XBRL Adoption Timeline.

As rightfully identified by Tun Dr. Mahathir and supported by Drucker (2001), knowledge has become a prevailing foundation of competitive advantage and crucial economic resource. Prior research in the US, by Pinsker (2003) specified that there was a poor understanding on XBRL amongst the upcoming XBRL stakeholders despite the attention given from the local media and paybacks of this "revolutionizing" technology advancement.

Lack of knowledge has been identified and validated by Troshani & Rao (2007) as one of the five obstacles that prevent the adoption of XBRL in Australia. As the other factors were found to be not pertinent amongst adopters from Public Listed Companies, it has been excluded from this research. In a typical XBRL reporting exercise, the management will need to be mindful that the ownership of submissions lies with the company and not the outsourcing vendor (Francis, 2013). XBRL reporting is not an IT process and the management will need to educate themselves to

comprehend that XBRL groundwork is an accounting and reporting process, not an IT process, added Francis (2013).

According to Rogers (1995), the paucity of knowledge in regard to any sort of invention affects the benefits that can be derived would affect the rate of adoption of the said invention. Studies have found that the likelihood of adopting XBRL can be reduced due to the deficiency of knowledge on XBRL, the way it works and the assistance. In Australia, Troshani & Rao (2007) study proposes that adopters were aware of the benefits of XBRL.

The sample results from the survey done by (Pinsker, 2003) still showed a lack of knowledge and information regarding XBRL in accounting and auditing even though information on XBRL has been distributed in a trade publication and read widely in newspapers in 1999. The lack of academic research contributed to the low levels of XBRL growth and knowledge amongst the sample population who were interested in view demonstrations on XBRL to understand its benefits but were not able to due to unavailability of resources. Overall, the sample respondents did not observe the intended benefits like increased effectiveness and efficiency that arises from XBRL.

Chartered Accountants (CA) have always played a huge role in helping the business world take a massive move forward, CAs will need to gain an understanding on in what way can XBRL upgrade business tasks to add value to their employers and optimize the benefits in preparing to adopt XBRL. Pinsker (2003) in his study placed the obligation on CAs to educate themselves on XBRL.

The findings of Francis (2012) revealed that software as mere enablers which provides automation and cannot substitute or replicate domain knowledge. The data represented in the XBRL document is only as good as the understanding of the person performing the tagging and/or a third-party consultant who does the checking for the tagging precision. To date, there are no software available in the market which provides for automatic tagging or coding.

Technical rules will need to be complied with when data is being tagged for conversion into XBRL format and when documents are prepared for compliance to regulators. A considerate amount of technical perspective on how XBRL works is utmost necessary to grasp the potential common pitfalls. XBRL-tagged data is not fundamentally similar to the underlying data from which it is derived as it is not as simple as converting a Word document into Adobe PDF format where the data is "inherently identical".



### 3.5.2 Organisational Characteristics

#### 3.5.2.1 Cost

Cost refers to the cost to adopt XBRL, availability of budget and time cost which companies would readily have to capitalize on for online technologies and innovation activities. The findings of various technological literature demonstrate that a decision on technological adoption is very much dependent on cost. Where the higher the cost, the lower the adoption. Cost is measured using three items which include, the cost of

adopting XBRL is far greater than the benefits, the cost of maintenance and support of XBRL are very high for our company and the amount of money and time invested in training employees in XBRL is very high. Refer to Appendix for Questionnaire – Section B: Factors Influencing XBRL Adoption Timeline.

The research by Premkumar, Ramamurthy & Nilakanta (1994) demonstrated that in the context of Electronic Data Interchange (EDI), the commercial aspect posed to be a crucial aspect as it requires firms to enlarge its automated connections with its trading partners outside the organization which could lead to savings in monetary form.

The study by Sulaiman (2000) revealed that in a typical e-commerce adoption, cost plays a significant role and for organizations in Malaysia, it was acknowledged for being amongst the main explanations for the non-utilization of trade products over the internet. The studies by Premkumar & Roberts (1999) posited that firms which are insignificant in size have a higher likelihood to implement technologies which are lower in cost.

Based on the study by Janvrin, Bierstaker and Lowe (2008), organizational size can also pose a challenge as organization which are insignificant in size might not have sufficient funding to implement technology like XBRL in contrast to companies with a bigger budget and sufficient funding. However, the findings of Doolin and Troshani (2007) was contradictory in the sense where their finding showed that organizations which are smaller in size tend to be less conventional and be extra exposed to technologies and innovative ideas than larger ones.

Most of the previous studies displayed that there is an important link between size and cost to adoption behaviour where larger companies appear to be adopters in comparison with the smaller ones which are normally non-adopters. Iacovou et al. (1995) modelled that organizations larger in size would be more financially sound and indicate available resources within the organization. In line with the previous findings, the likelihood of companies being ready adopters would be in tandem with the higher the level of resources.

#### 3.5.2.2 Internet Knowledge (IK)

Internet knowledge refers to the internet knowledge of the employees within the Public Listed Companies. The internet knowledge is measured using three items which include; most employees are computer literate and internet savvy, there is at least one employee who is a computer expert and I would rate my employees' understanding of internet and technology as very good compared with other companies in the same industry. Refer to Appendix for Questionnaire – Section B: Factors Influencing XBRL Adoption Timeline.

Besides the concerns about cost of investments, organizations do have issues relating to lack of manpower and know-how. Based on the literature reviews of previous studies, at organizational level, technology adoption is majorly affected by Internet Knowledge (Hussein et al., 2007; Thong, 1999; Thong & Yap, 1995). Hussein et al. (2007) also posited that in a Malaysian setting, a sound understanding of IT at management level poses a positive and direct stimulus on the success of IS

implementation. Organizations which possess higher internet knowledge reduces the level of ambiguities in any potential technology adoption.

The research by Thong (1999) revealed that smaller companies were more inclined to push back the implementation of a technology until internet information obstructions were reduced and dodged. These discoveries were very much applicable in the context of XBRL as well. Thus, ensuing a less risky technology adoption and successful implementation.

As the foundation for a digitized future is being built in Malaysia, it is undeniably important for preparers, who are normally accountants to have at least an elementary level of knowledge and information on the terms, essentials and basic technicalities of XBRL from an accounting perspective suggested Francis (2012). In Malaysia, Illias (2014) found that only about 3.1% of those who responded to her survey had a good grasp on XBRL and 18% had an understanding of the underlying principles of XBRL, while the greater part of those who responded did not have any idea of what XBRL was and what it was all about. In addition to the understanding on XBRL consciousness, the study by Illias also demonstrated that there could be a likelihood that XBRL may potentially be noteworthy and be widely accepted as there were more than half of the population (67.2%) who responded to have a more curious sense to want to know more about XBRL and the technology revolving around it.

### 3.5.3 Technological Characteristics

#### 3.5.3.1 Compatibility (CM)

In this study, compatibility refers to how compatible XBRL is in line with the values of the company, its values and business needs. If a technology is more compatible with a company, there would be less resistance because there would be a need to adopt and use the technology for the good of the company. However, lack of awareness on a particular technology may reduce the level of compatibility of the said technology. The compatibility is measured using three items which are the adoption of XBRL is consistent with the values, beliefs and business needs of our company, there is sufficient support for the adoption of XBRL from our top management and there is no or only minimal resistance to change from our staff. Refer to Appendix for Questionnaire – Section B: Section B: Factors Influencing XBRL Adoption Timeline.



There are a couple of new technologies which are easily accepted due to its low complexity while some may have the propensity to be more complicated, resulting in poor acceptance and adoption (Rogers, 1995). Innovations that are perceived as less compatible are less likely to be implemented. The study in New Zealand performed by Cordery, Fowler and Mustafa (2011) demonstrated that as a new innovation, XBRL is not difficult to understand. However, the complication is in developing an appropriate structured glossary (taxonomy) for XBRL in fast moving situations and has a significant implication to the non-adoption of XBRL. The adoption of new technologies such as XBRL is normally a prolonged and delayed process because it is more difficult to be understood by preparers due to its intricacies.

### 3.5.3.2 Relative Advantage (RA)

Relative advantage is defined as the degree to which a technology adoption is perceived to be beneficial to the company and better than the traditional paper-based business. The relative advantage characteristics is measured using five items which are our company is satisfied with the use of internet and technology in business, technology adoption has enhanced the corporate image of our company, internet and technology adoption has helped establish stronger links with our clients or other organisations, internet and technology adoption has helped our company develop new business opportunities and internet and technology adoption has helped to bring down the commercial spending on advertising and business development, consumer facility and upkeep, data collecting and telecommunicating. Refer to Appendix for Questionnaire – Section B: Factors Influencing XBRL Adoption Timeline.

Rogers (1995), in his DOI Theory suggested that the Relative Advantage of any invention is positively related to the implementation of that innovation while Taylor and Todd (1995) revealed that RA is a significant element in defining the acceptance of an innovation. RA was part of Roger's Perceived Characteristics in his Innovations Diffusion Theory (Venkatesh et al., 2003). Based on the Diffusion of Innovation (DOI) framework by Rogers (1995), Relative Advantage (RA) is defined to be the standard of when an innovation is perceived to be better than the previous idea, technology or product.

As XBRL has been discovered to be a faster, more accurate and economical way to disseminate information, XBRL adopters have been presented with more benefits as compared to other formats and methods of information dissemination. Cordery, Fowler and Mustafa (2011) posited that organisations who did not perceive that XBRL will constructively minimise the expenses undertaken to adhere to a particular mandate were not open to adopt XBRL despite the common notion possessed by regulators that the prospects of cost reduction to comply to a particular standard should be adequate to drive companies to implement XBRL and other innovative technologies.

Based on the advantages XBRL offers, potential adopters from Public Listed Companies would recognize the benefits that would be garnered from XBRL implementation and likely be prepared to implement XBRL. The management of organizations who are ready for technology adoption are normally the ones who has acknowledged the relative advantages of XBRL. Thus, those who has a higher perceived relative advantage are normally eager to channel the necessary funds and funding for XBRL adoption in the organization.

### 3.5.4 Environmental Characteristics

Organizations differs by structures, philosophies and function at various intensities. Institutional theory states that social and ethnic elements and concerns for legitimacy drives organizational resolutions such as technology adoption and does not solely rely on sensible objectives such as of efficacy. Institutional theory stresses that an entity's

organization and its activities are very much influenced by its surroundings posited Scott (2001).

According to Dimaggio & Powell (1983) the disparity between institutions are reduced due to pressures for legitimacy. Thus, institutions in the identical arena are inclined to become more competitive as pressures from customers provoke them to duplicate industry leaders. Rather than internally motivated resolutions to adopt a certain innovation, institutions are more probable to be persuaded to embrace and use innovations based on external drivers such as competitor advantage, trade cohorts, regulators and clients.

Institutional theory has been used in several EDI diffusion and assimilation researches. Teo, Lim & Fedric (2007) found that the normal, imitative and intimidating pressures that exist in institutionalized environments may influence organizations' tendency to adopt an IT-based inter organizational system. Studies also discovered that uninspired pressures were found in firms who adopt a practice or innovation just to imitate its competitors.

Dimaggio & Powell (1983) found that normative forces originate from associations with trading partners where businesses collaborate in the usage of data, guiding principles and standards while threatening forces come from a couple of formal or informal pressures which is imposed on organizations by other organizations on which the former organization hinges on. Based on DiMaggio and Powell, the norms facilitate harmony when it is shared via social channels amongst members of a

network and causes the strength of these norms to surge. Thus, causing an influence on organizational conduct.

TOE framework has been combined with the theory of institution to add to the ecological context of the TOE framework's exterior forces, which refers to forces exerted by competitors and trading partners (Gibbs & Kraemer, 2004). Factors relating to external pressures refers to influence from external parties, amongst which the three main sources are (1) competitive pressure (2) imposition by trading partners and (3) Government regulation to adopt XBRL.

#### 3.5.4.1 External Pressure (EP)

In the context of this study, the external pressure or push factors include the pressure asserted from the environmental inherent factors such as competitors, industry trading partners and government regulation, which is beyond the control of the company. External Pressure is measured using five items which are Competition is a factor in our decision to adopt XBRL, social factors are important in our decision to adopt XBRL, my company depend on other firms that are already using XBRL, our industry is pressuring us to adopt XBRL and our organization is pressured by government to adopt XBRL. Refer to Appendix for Questionnaire – Section B: Factors Influencing XBRL Adoption Timeline.

Low, Chen and Wu (2011) proposed that the influence from rivals and merchandizing allies should be the driving principles to be assessed in an ecological setting. Both the

findings from Low et al. (2011) and Oliveira and Martins (2011) proved that businesses are normally driven to keep up with the present trends and exposed to innovations based on the force that comes from both rivals and merchandizing allies. Corporations which are larger tend to see the urgency and need to adopt new technologies to remain in the forefront (Teo, 2007).

As posited by Low et al. (2011), the findings of Hart and Saunders (1997) further supported the findings that the implementation of any innovation by peer companies within the similar industry plays a pivotal role and causes significant pressure to an organisation in the implementation of innovations. In the case of XBRL, such obligations are prevalent because it relies heavily on a network.

The findings from Cordery, Fowler and Mustafa (2011) showed that the absence of push from the government resulted in organisational ignorance which formed the first main reason for XBRL non-adoption in New Zealand. The study by Kamel (2006) revealed that government regulation can help eradicate and solve issues and risks posed relating to lack of knowledge, expansion of substructures, formation of native subjects based on predominant vernacular and society needs in the local environment.

The study carried out by Ilias and Ghani (2015) found that there was no Public Listed Companies in Malaysia who have adopted and implemented XBRL from the month of December 2014 up to the month of January 2015 despite all the hype and purported benefits of XBRL based on case studies from XBRL implementation across the globe. There was no XBRL implementation amongst local companies in Malaysia due to

there being no regulation made for the compulsory adoption of XBRL by the government or local regulators in Malaysia. Their study also found that only 24% of the companies prepared their financial information in HTML and online interactive instance documents while the majority or 67% of the companies still prepares their financial information in excel and PDF format.

#### 3.5.4.4 External Support

For this study, external support refers to the extend to which the external organisations such as agencies, regulators, government and vendors provide support in terms of XBRL adoption, which could be in the form of training, knowledge sharing, incentives or softwares. The external support characteristics is measured using four items which are Regulators and government agencies provide incentives for XBRL adoption, there are business partners who provide training on XBRL, Technology vendors actively market XBRL by providing incentives and subsidies for adoption and Technology vendors promote XBRL by offering free awareness workshops, training sessions and technical support for effective XBRL adoption. Refer to Appendix for Questionnaire – Section B: Factors Influencing XBRL Adoption Timeline.

Troshani and Rao (2007) discovered that setbacks faced by XBRL adopters are generally issues such as lack of a local adoption strategy and absence of widespread awareness of XBRL benefits to motivate adoption. They added that training is very much required for XBRL implementation as it poses significant impact and could

raise the rate of adoption. The experimental research by Bartley, Al Chen and Taylor (2010) in the USA, recommended that preparation and coaching as the key obstacle that can obstruct the implementation of XBRL. Therefore, if there is the absence of awareness and training not available, XBRL adoption will be slow.

Government involvement in the form of funding, grants, monetary inducements and endowment, provisions, subsidized coaching and teaching sessions are found to stimulate and encourage acceptance and adoption amongst Public Listed Companies (Scupola, 2003). In addition to that, the backing from business partners who are not rivals from the similar trade along with government intervention may also drive the acceptance and implementation of new technologies. Hence, there would be a high level of success amongst the innovation adopters who will likely continue utilizing the technology, when there is a strong external support which is effective.



### 3.5.5 Perceived Timeline to Adopt XBRL

The perceived timeline to adopt XBRL refers to the timeframe interpreted or appraised by the respondents of their own readiness as to when they would be ready to adopt XBRL, be it immediately, after a duration of one year or more than a year. The perceived timeline to adopt XBRL is measured using three items which are: (1) My company intends to adopt XBRL right now, (2) My company will be ready to adopt XBRL in a year's time, and (3) If my company could, my company would like to further delay the time to adopt XBRL after one year or later. Refer to Appendix for Questionnaire – Section B: Factors Influencing XBRL Adoption Timeline.

### 3.6 Measurement of Variables/ Instrumentation

Sekaran & Bougie (2013) defined the questionnaire as set of closely defined questions that were formulated to have the respondents recording their answers. Questionnaires should be simple, straight to the point and easy to read, where the language used is equivalent to the high school level of comprehension (Frazer & Lawley, 2000). The maximum words used in most of the questions did not exceed 20 words as suggested.

In this research, there was two parts to the questionnaire, with the first part being the section on general information with demographic components and the second part being the items relating to the factors influencing XBRL adoption timeline. Frazer and Lawley (2000) also posited that the overall length of the questionnaire was less than 7 pages which is preferable length for a survey.

The front part of the questionnaire would consist of the cover letter indicating the ethics approval along with the objective of the study and contact information of the researcher. The cover letter would be signed by the researcher and further appealing the respondents to respond well by highlighting the criticality of the research. The respondents would also be assured of their anonymity. Upon the request of respondents', the findings of the study would be given to them.

All constructs and items were adapted from existing literatures which are in line with the underpinning theories used for this study. To ensure the reliability and validity of the instruments, all the constructs and items were taken with prior permission from

the study performed by Ramayah et al. (2016) and adapted to suit the purpose of this study.

Management innovativeness with six items and six items on Management Knowledge were adapted from Al-Qirim (2005) and Thong and Yap (1995), three items on Cost were altered from Premkumar and Roberts (1999) while the three items on Internet knowledge were modified from Thong (1999). The three items on the Compatibility and Relative advantage with five items were reformed from Chong and Pervan (2007).

The five items on External Pressure were altered from Grandon and Pearson (2003) and lastly the four item External Support were taken from Premkumar and Roberts (1999) and adjusted for this study. The three items for the factors influencing the perceived timeline for XBRL adoption has been adapted from Ramayah et al. (2016). Refer to Table 3.1 below for the summary of questionnaire items.



There was no filtering question in the instrument for respondents to indicate if they have already adopted or used XBRL because regulators have not released the XBRL taxonomy for reporting in XBRL format without which, companies will not be able to translate their business and financial information into XBRL format during the data collection period of the study. Based on SSM's website assessed on January 2018, the final set of taxonomies files including Taxonomy Guide will be made available along with Malaysian Business Reporting System Portal during the "Go Live" session during the second quarter of 2018. The regulator has also yet to release the mandate to

collect financial information in XBRL format for Public Listed Companies in Malaysia.

Table 3.1
*Summary of questionnaire items*

| Variables | No of Items | Source |
|---|---|---|
| **Management Characteristics** | | |
| Management Innovativeness (MI) | 6 | Al-Qirim (2005) |
| Management Knowledge (MK) | 6 | Thong and Yap (1995) |
| **Organizational Characteristics** | | |
| Cost (CO) | 3 | Premkumar & Roberts (1999) |
| Internet Knowledge (IK) | 3 | Thong (1999) |
| **Technological Characteristics** | | |
| Comparability (CM) | 3 | Chong & Pervan (2007) |
| Relative Advantage (RA) | 5 | Chong & Pervan (2007) |
| **Environmental Characteristics** | | |
| External Pressure (EP) | 5 | Grandon & Pearson (2003) |
| External Support (ES) | 4 | Premkumar & Roberts (1999) |
| Perceived Timeline to Adopt XBRL (PTAX) | 3 | Ramayah et al. (2016) |



All items are based on four-point Likert-scale. Likert scales were used to operationalize each construct. All major scale items are grounded on a Likert-scale with four-points ranging from 1 for strongly disagree to 4 for strongly agree. This principle of attitude measurements was developed by Likert (1932) by having the respondents responding towards a list of questions to describe the degree of agreement or disagreement. A Likert scale is appropriate when a study is done to quantify the attitude of respondents´ attitude toward some constructs. Based on the study conducted by Jamieson (2004), the four-point Likert scale is used to produce a forced choice measure where no unresponsive option is available.

Studies have shown that several market researchers have been using the 4-point scale to get specific responses. The purpose for using a four-point Likert-scale with no neutral option is to extract a specific response from the respondent as the safe 'neutral' option is not provided. Therefore, the four-point Likert-scale is also known as a forced Likert scale since the respondent is forced to form an opinion. All eight observed variables were measured using the 4-point Likert scale of ‘Strongly disagree' to ‘Strongly agree'. Thus, cut-off or midpoint of 2.5 was assigned to indicate the neutrality between the agree and disagree opinions for each statement.

### 3.6.1 Expert Opinion

Eight experts in the technology and innovation area who are business analysts and consultants were consulted to validate and improve the questionnaire items. The viewpoints from the experts were obtained to ascertain the sequencing, validity and consistency of the questionnaire items. At the onset, the experts viewed the questionnaire to be of sufficient length. The experts were also asked to substantiate the proposed research framework, verify the operationalization of the variables and cross-examine the goodness of the research questionnaire to ensure each question appropriately measures what it is supposed to measure. As the questionnaire has been used in previous study, not much refinements or edits were required as the questionnaire was easily understandable and each question appropriately measured what it was supposed to measure.

### 3.6.2 Pretest

Pretest is the assessment and evaluation for sensitivity and standardization of the question items in the questionnaire before the start of the pilot test and final data analysis. According to Cooper and Schindler (2006), it is considered as an established practice for discovering errors in the questions, question sequencing and instructions. Pretest lessens the problems that arise from ambiguous wordings and biases (Sekaran & Bougie, 2013).

The selection of the respondents for pretesting is an important issue, as raised by Hunt, Sparkman and Wilcox (1982). Therefore, in the current study, three managers and three executives from the Finance and IT Departments of Public Listed Companies in Klang Valley were chosen to interview using convenience sampling for their feedback.



The respondents who participated in this pretesting study were excluded for the sample used later in the analysis. The targeted respondents were initially visited and later, based on the participated respondents' convenience, an appointment was fixed. Each of the respondents was presented with one set of questionnaires and they were asked to answer the questions along with the objective of evaluation of each item.

The pretest was carried out using the debriefing method of personal interviews as described by Hunt et al. (1982). According to the debriefing method, while the respondents were asked to fill up the questionnaire, the researcher makes careful

observations. In addition, the time taken to fill up the questionnaire by the respondents was recorded by the researcher to ensure the maximum level of quality. The time taken by the respondents to fill up the questionnaire was around 20- 25 minutes.

After filling up the questionnaire, each respondent was asked on the relevancy of the scales used and questionnaire items to ensure there was no ambiguity present in the questions and to provide suggestions on the items. The respondents were asked to evaluate; 1) the clarity of the words and sentences and meanings, 2) layout and sequencing of the questionnaire, 3) scale used and finally 4) the appropriateness of the questions that measures the independent variables identified. The respondents were also requested to give specific suggestions to improve the questionnaire.

In general, the respondents did not face any ambiguity in the wordings or sentences of filling up the questionnaire during the pretesting process. The respondents also commented that the wordings and sentences of the items were clear enough to understand and the questionnaire was well sequenced and acceptable scale.

### 3.6.3 Pilot Study

In addition to the expert opinion and pre-test, the Pilot study would also provide a further check on the responses provided to enable the researcher to re-word or re-scale specific questions that were not answered as expected. A test was conducted as part of the pilot study involving 30 people to evaluate the reliability of the instrument and as

part of the validation of the questionnaire to guarantee its efficacy has been carried out per the recommendation of Compeau and Higgins (1995). As discussed in more detail under Section 3.7 Sampling, the respondents for this study will include the senior executives or managers from either the Finance or IT departments of Public Listed Companies in Peninsular Malaysia. The target population of the Pilot study was not part of the actual study.

Though the pilot study itself cannot guarantee the attainment of a successful full-scale study, it however does increase the likelihood that the main study would indeed be effective. Anderson (2004) strongly advises the running of a pilot study to ensure an effective instrument is designed, as an inappropriately designed survey or instrument is likely to generate data that will be of little value. Aside from developing and testing the adequacy of a research instrument, the pilot study would also be able to assess the viability of a full research.



The surveys were distributed to 30 participants to test the instrument for reliability. All of the respondents were given the poll to administer on their own as there was a pre-test was already conducted to gather responses via direct interviews by the author. to encourage dialogue with the respondents to gather feedback on the issues that arose from the survey instrument such as ambiguities and difficult questions. The key benefit of direct interviews in person by the author is that the author will have the liberty to adjust the queries as needed, elucidate doubts and make certain that respondents correctly comprehend the questions (Sekaran & Bougie 2013). The questionnaire took an average of 15 minutes to 20 minutes to complete.

### 3.6.4 Pilot Data Entry and Analysis

Data from the 30 respondents were entered directly into the Statistical Package for Social Sciences (SPSS) software version 22.0 for Windows, with specific codes used for each questionnaire item. There was a need to transform one of the data via reverse coding to maintain the consistency in the meaning of a response where a higher score would indicate a negative meaning or negatively influence the relationship of the Independent Variable (IV) towards the Dependent Variable (DV). The item which was reverse coded for this study was one of the item of the DV, PTAX3 to RePTAX3.

### 3.6.5 Respondents' Demographics

Since the Pilot Study yielded a positive outcome and as the target population of the Pilot study was not part of the actual study, the descriptive analysis (demographics) were disclosed to ensure that there was a sufficient representation of the population made during the Pilot study and a similar pattern can be viewed during the actual study. Mason and Zuercher (1995) posited that to make the best use of the research experience, it is important to share the findings of the Pilot study about what exactly was learnt as it might be beneficial to those using similar methods and instruments, beyond the norm of reporting that the Pilot study was carried out to test the validity and reliability of the model. The following segment, provides a discussion on the demographic characteristics of the Pilot Study respondents regarding job level, current experience, overall experience, age, race, education level and industry.

**Job Level of respondents**

Most the respondents for the Pilot study were Managers (46.7%), followed by Top Management (36.7%) and Executives (16.7%). The response from the top management was good although it was very difficult to get in touch with the top management of the companies' due to protocols and their schedule.

Table 3.2
*Demographics of Respondents of the Pilot Study – Job Level*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Job Level | Top Management | 11 | 36.7 |
| | Managers | 14 | 46.7 |
| | Executives | 5 | 16.7 |



**Current Experience of Respondents**

Most of the respondents for the pilot study were comprised of people who were in their current roles for less than 5 years (86.7%) and those who were in the company between 5 to 10 years (13.3%). There were no respondents of the experimental study who has been with the company for more than 10 years.

Table 3.3
*Demographics of Respondents of the Pilot Study – Current Experience*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Current Experience | Below 5 yrs | 26 | 86.7 |
| | Between 5-10 yrs | 4 | 13.3 |
| | Above 10 yrs | - | - |

**Overall Experience of Respondents**

Most of the respondents were comprised of people who has had an overall working experience of more than 20 years (47.3%), followed by those who have between 10 to 20 years of overall experience (40.6%) and followed by those who have had less than 10 years of overall experience of less than 10 years (12.1%).

Table 3.4
*Demographics of Respondents of the Pilot Study – Overall Experience*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Overall Experience | Below 10 yrs | 3 | 10.0 |
| | Between 10-20 yrs | 10 | 33.3 |
| | Above 20 yrs | 17 | 56.7 |



**Age of Respondents**

Most of the respondents for the pilot study were comprised of people between the age of 36 to 55 years (83.3%) and those who were below 35 years of age (16.7%). There were no respondents who were more than 55 years old for the pilot study.

Table 3.5
*Demographics of Respondents of the Pilot Study – Age*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Age | Below 35 yrs | 5 | 16.7 |
| | Between 36-55 yrs | 25 | 83.3 |
| | Above 55 yrs | - | - |

**Race of Respondents**

The 30 respondents were mainly from the three ethnicities in Malaysia, with the majority being Chinese (45.3%), followed by Malays (28.9%) and Indians (20.3%) and a handful of other ethnic groups.

Table 3.6
*Demographics of Respondents of the Pilot Study – Race*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Race | Malay | 9 | 30.0 |
| | Chinese | 11 | 36.7 |
| | Indian | 9 | 30.0 |
| | Others | 1 | 3.3 |



**Education Level of Respondents**

The respondents for the pilot study were mainly Masters holders (36.7%), followed by graduates (33.3%) and those who has Professional Certification (26.7%). There was only 1 person who was a Diploma holder (3.3%) and no one with a Doctorate in Business Administration (DBA) responded to the pilot survey.

Table 3.7
*Demographics of Respondents of the Pilot Study – Education Level*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Education Level | Diploma | 1 | 3.3 |
| | Graduate | 10 | 33.3 |
| | Masters | 11 | 36.7 |
| | DBA/ PHD | - | - |
| | Professional | 8 | 26.7 |

**Industry of Respondents**

The demographics by industry of the respondents for the pilot study showed that a significant portion of the participants were from the Service industry (66.7%) while those from the Manufacturing industry (16.7%) and followed by those from the Oil & Gas, Retail and Construction (6.7%, 6.7% and 3.3%).

Table 3.8
*Demographics of Respondents of the Pilot Study – industry*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Education Level | Manufacturing | 5 | 16.7 |
| | Oil & Gas | 2 | 6.7 |
| | Construction | 1 | 3.3 |
| | Retail | 2 | 6.7 |
| | Service | 20 | 66.7 |



### 3.6.6 Reliability Analysis (Cronbach's alpha)

Reliability can be defined as 'the degree to which measures are free from random error and therefore yield consistent results' (Zikmund, 2003). The pilot responses which were gathered for the study were tested on its reliability measure. The reliability is an assessment of the degree of consistency between multiple measurements of variables (Hair et al., 2014). Reliability of data is crucial for this research as it gives an assurance that the results will be free from errors and valid as it provides a reliable dimension which could be used across a time dimension and numerous items in the tool. The objective of reliability is to minimize the errors and biases in research. This study has employed the Cronbach's alpha to assess the

reliability of the constructs. Measures of internal consistency are only calculated for the first-order reflective scales (Staples & Seddon, 2004). According to Sekaran & Bougie (2013), the reliability of a measure points out the degree to which the measures is unrestricted of error (without bias) signifying a reliable measurement which could be used across a time dimension and numerous items in the tool. Dependability indicates how well the items are assessing the concept which are grouped together (Sekaran & Bougie, 2013).

Cronbach's Alpha generally increases as the inter-correlations among test items increase and is known as an internal consistency estimate of the reliability of test scores. A Cronbach Alpha (coefficient alpha) scale reliability examination was completed to ensure the internal consistency and dependability of each of the four variables within the proposed framework. Based on the work of Sekaran and Bougie (2013), a Cronbach alpha coefficient of adjacent to 1.0 specifies that the item is considered to have high internal consistency of reliability. The measurable analysis of the survey responses obtained were summarised and represented plainly. The findings of Sekaran and Bougie (2013) further demonstrated that the consistency indicates the extent to which the concepts are measured.

Cronbach’s alpha is a consistency constant that designates the extent to which items in a fixed group is correlated positively to one another and is measured in terms of the average inter relationships of the variables that measure the notion. The consistency coefficient that is indicated by the Cronbach alpha values reflects the instruments dependability. Cronbach’s alpha can hold a value from zero to 1. In theory, the

Cronbach's alpha with a greater degree of internal consistency reliability would show a reading that is nearer to 1.

According to Nunnally (1967), all Cronbach's Alpha coefficient (α) values higher than 0.6 are considered to be acceptable. In the pilot-test study which was carried out with an aim to reassess and to quantify the reliability of the survey, the Cronbach's alpha is carried out on a sample of 30 participants. Cronbach's Alpha reading for each of the nine variables showed a value which is above 0.6 indicated a consistent measure of the purpose of the experiment and that the respondents did understand the questions and the questionnaires which was prepared would be usable for the entire research. The summary results of the Reliability Analysis (Cronbach's alpha) provided in Table 3.9 clearly demonstrates the feasibility of the instrument used for this study. No further changes were therefore required on the Questionnaire. The Cronbach's alpha acquired via SPSS computer analysis on the pilot study are as follows:



Table 3.9
*Cronbach's Alpha Coefficient of the Pilot Study (N=30)*

| Variables | Cronbach's Alpha | No of Items | Strength |
|---|---|---|---|
| **Management Characteristics** | | | |
| Management Innovativeness (MI) | 0.610 | 6 | Moderate |
| Management Knowledge (MK) | 0.955 | 6 | Excellent |
| **Organizational Characteristics** | | | |
| Cost (CO) | 0.670 | 3 | Moderate |
| Internet Knowledge (IK) | 0.761 | 3 | Good |
| **Technological Characteristics** | | | |
| Comparability (CM) | 0.826 | 3 | Very Good |
| Relative Advantage (RA) | 0.792 | 5 | Good |
| **Environmental Characteristics** | | | |
| External Pressure (EP) | 0.782 | 5 | Good |
| External Support (ES) | 0.622 | 4 | Moderate |
| Perceived Timeline to Adopt XBRL (PTAX) | 0.885 | 3 | Very Good |

### 3.7 Data Collection

The application of survey methodology to this study was establishes as the utmost suitable technique. Creswell (2003) indicated survey as being able to accurately assess sample information therefore enabling us to have the conclusions on finding generalizations being drawn from population response samples. Hair, Bush and Ortinau (2003) reinforced this method as being suitable for large sized samples. Sekaran & Bougie (2013) added on the benefits of this survey being rapid, cheap and easily administered.

Standardized questionnaires were used within the field survey method to collect data. As the unit of analysis are individuals comprising of one executive or manager to represent one Public Listed Company, field survey method using standardized questionnaires are most suitable because:

- These senior executives and managers will be able to respond at their convenience.
- It is a suitable method of collecting data remotely from widely spread out population, which is not feasible to be examined directly where the questionnaires are normally mailed in to ensure that the population is reasonably covered.
- It is a medium for measuring a variety of discreet data such as attitudes, preferences and behaviours'.

### 3.8 Sampling

As the population size is known, the table for determining sample size for a finite population created by Krejcie and Morgan (1970) was used to determine the sample size. Based on Bursa Malaysia Website up to December 2016, there are 940 Public Listed Companies in Malaysia which comprises of 809 companies listed on the Main Market, 113 companies listed on the Ace Market and PN17 companies comprising of 18 listed companies. PN17 issued by Bursa Malaysia, stands for Practice Note 17/2005 and relates to companies which are in monetary misery.

With a known population of about 940 Public Listed Companies in Malaysia, the recommended sample size would be 274 based on a population of 950 from the Table created by Krejcie and Morgan (1970) (Refer to Appendix 2). The Public Listed Companies were selected based on a random probabilistic sampling where each company has an equal chance of being picked for the study with the available contact information from the internet. This method of sampling were chosen to ensure generalizability of the results.

The unit of analysis comprise of either one senior executive or manager to represent one Public Listed Companies in Malaysia. Senior executives and managers were chosen because they have the vantage point and represent the top managers as revealed by the study done by Damanpour and Schneider (2006). The study also revealed that this group are the most influential people affecting innovation and change in organizations.

Within each of the Public Listed Companies which were randomly picked, the senior executives and managers from the Finance and IT Departments were selected as the underlying population of the research based on a purposive sampling (judgement sampling) method. In this sampling method, a specific type of people are picked to provide the information that is sought either because they are the only ones who have the information or are in the best position to provide the information required (Sekaran & Bougie, 2013). The main objective of a purposive sample is to produce a sample that can be logically assumed to be representative of the population, which is the Public Listed Company for this study.

The senior executives and managers were handpicked from the Finance and IT Departments to understand the internal and external factors influencing the perceived timeline of XBRL adoption because these are the departments who are in communication with the government agencies to spearhead XBRL adoption and reporting.



### 3.9 Data Collection Procedures

The entire data collection process lasted about 8 months, where data was gathered using standardised self-administered survey forms. The surveys were disseminated using both internet and mail survey method and few face-to-face interviews by the author in person. The key benefit of direct interviews in person by the author is that the author will have the liberty to adjust the queries as needed, elucidate doubts and make certain that respondents correctly comprehend the questions besides being able to deal with issues that are posed from all other methods (Sekaran & Bougie, 2013).

Albeit the drawbacks caused due to the adoption of survey-based exploration, the paybacks due to low investment, accessibility, obscurity and decreased partiality which arises from direct interviews appear to prevail over the drawbacks.

Podsakoff, MacKenzie, Lee and Podsakoff, (2003) advocated that the crucial key to be addressed is that the practical and arithmetical remedies that is chosen would need to be modified and altered to suit the specific purpose of the study. There can never be a one size fit all or one preeminent technique to eradicate issues that arise due to common method variance because it very much contingent on what the sources of variance are in the research and the viability of the remedies that are available.

For the internet or online survey method, data collection was administered using paid online survey software, Survey Monkey. Each respondent received an electronic mail requesting participation in the survey with a link to a website where the survey may be attempted. To avoid replication and multiple submission, password-protection was incorporated to eliminate distortion to the actual data. Per the study by Podsakoff et al. (2003), the latent practical mitigation step taken to lessen the prejudice in terms of the technique used in this research was to guarantee a response anonymity.

In cases where the electronic mail addresses provided were non-functional, the same standardised self-administered questionnaire was mailed out to the respective addresses of the Public Listed Companies for agreeable respondents to complete at their convenience and returned via prepaid postage envelopes. Continuous tracking was done on a weekly basis to track the non-respondents, during the consolidation

process of the online results along with the manual input for those responses received via hardcopy onto an excel spreadsheet. Reminders were then sent via email with the links to non-respondents to ensure there was a surge in the number of those responding. The main weakness of the mail survey is non-response. Thus, the combination or following up with telephone call/ interview were used for this study.

### 3.10 Techniques of Data Analysis

Data analysis dictates how information will be organized, classified, compared and displayed while providing a methodical documentation of trends amongst the information gathered. As such, data analysis was performed on the information which was gathered, systematized and tabulated into a spreadsheet to achieve the objectives of the study. Prior to running the assessment on the measurement and structural model using PLS-SEM (SmartPLS version 3.0), the initial tests were run on SPSS software version 22.0.



#### 3.10.1 Descriptive Analysis

Descriptive analysis provides the basis for additional arithmetical examination which include the count, ranges, occurrences and relationships among variables. It also includes the calculations of mean, mode, median, variance and standard deviation (Trochim, 2006). The summarising and transformation of data into an comprehensible and an understandable and interpretable mode is covered under the Descriptive Analysis phase. As part of the descriptive analysis, frequency distribution, percentage,

mean and standard deviation was used to describe the features of the demographic data of respondents. The results of the descriptive analysis is shown in Chapter 4.

### 3.10.2 Reliability Test

Reliability can be defined as ‘the degree to which measures are free from random error and therefore yield consistent results' (Zikmund, 2003). The reliability is an assessment of the degree of consistency between multiple measurements of variables (Hair et al., 2014). The objective of reliability is to minimize the errors and biases in research. This study has employed the Cronbach's alpha to assess the reliability of the constructs. Measures of internal consistency are only calculated for the first-order reflective scales (Staples & Seddon, 2004). Cronbach's Alpha generally increases as the inter-correlations among test items increase and is known as an internal consistency estimate of the reliability of test scores.



Validity is a word relating to a measure that precisely reveals the concept it is intended to measure. There are many validities to look at. First, face validity is designated by whether the items described on the questionnaire are obvious and comprehensible to the subjects. Second, content validity is pertaining to the degree a measure encompasses the variety of meanings contained inside a concept. These are measured by providing the questionnaire to a sample of respondents (experts) to judge their response and feed-back to the items. Third, construct validity is the degree to which other variables associate between themselves within an expected system of hypothetical associations.

The reliability and validity of the measurement tool was measured using the SmartPLS tool within this study and results generated via the Construct Reliability and Validity report, the results of the reliability test is further discussed in Chapter 4.3.5.

### 3.10.3 Factor Analysis for sample size and Total Variance Explained

#### (1) Sampling Adequacy

Sampling adequacy can be tested using Bartlett's test of Sphericity which was generated via the study performed by Bartlett (1954) and Kaiser-Meyer-Olkin (KMO) (Kaiser, 1970). Kaiser-Meyer-Olkin (KMO) value explains the validation of a scale or index by demonstrating that its constituent items load on the same factor and unloaded the proposed scales items which cross-load on more than one factor. KMO, which is the measure of sampling adequacy, is used to compare the magnitudes of the observed correlation coefficients about the significances of the partial correlations.



Large KMO values are good because correlation between pairs of variables (i.e., potential factors) can be explained by other variables. The KMO value of .6 is suggested as the minimum value for a good factor analysis (Tabachnick & Fidell, 2013). The minimum value for KMO should be above 0.5 and Bartlett's test of Sphericity should be significant ($P < 0.05$) for the data to be appropriate (Hair et al., 2010; Pallant, 2013). If the KMO less than .5, subsequent factor analysis should not be carried out.

Bartlett's test of sphericity is used to test the hypotheses that the correlation matrix is an identity matrix which has all off-diagonal terms as zero and with diagonal terms as one. The researcher is looking for ‘Significance' value to be less than .05 as the variables are required to be correlated. If they are not correlated to the other items then they cannot be part of the same factor.

**(2) Total Variance Explained (Common Method Variance Test)**

As the data was collected from a single respondent or source to represent each Public Listed Company it is important to check the common method variance (Podsakoff et al., 2003). The data collected using the questionnaire which was adapted from prior literature, a Common method bias (CMB) may be a potential problem which should be tested and detected. The presence of CMB would pose a threat to the validity of the conclusions regarding the relationship between variables. Podsakoff et al. (2003) posited that CMB can be caused by; 1) the existence of artificial covariance between the criterion an predictor variable due to elicitation of responses from the same individual; 2) the tendency for respondents to maintain consistency in their responses to questions; 3) the tendency for some individuals to provide social acceptable responses to questions instead of answering truthfully due to social desirability; 4) the tendency of respondents to either agree or disagree the questionnaire items independent of their content; 5) the artificial co-variation caused by the use of the same scale format on a questionnaire (e.g. Likert scale, semantic differential scales); 6) the scales are written in a way that reflects socially desirable attitudes, perceptions, or behavior; and 7) scale length-scales with fewer items may allow respondents to

more easily recall responses to previous items, which may influence their responses to other items.

Common Method Variance (CMV) which is caused by the measurement method rather than the constructs of the measures is measured via Principal Component Analysis to generate the Total Variance Explained Report. Principal component analysis was used as a procedure for confirmatory factor analysis to deliver a sound perception of the associations between the variables by streamlining the description of those variables. This is one of the most widely applied statistical procedures to test for the presence of common method bias and involves loading all the indicators (question items) into an exploratory factor analysis and subsequently examining the un-rotated component matrix to determine the number of factors necessary to account or the variance in the variables. CMV is a potential problem associated with research especially studies that involves self-reports from the same sources such as questionnaires, surveys, and interviews.



A principal components analysis will form as many components as there are variables. If all components were to be retained in the analysis, all variance in the variables will be able to be accounted for. However, the purpose of principal components analysis is to explain as much of the variance as possible using as few components. The norm is to have initial factor which will provide an explanation on the greatest amount of total inconsistency, whereby the remaining factors will provide a lesser explanation in comparison of the cumulative inconsistency. Therefore, only

the first few variables will be preserved for analysis and account for most the total variance. The results of CMB is shown in Chapter 4.

### 3.10.4 Structural Equation Model (SEM)

Although the analysis of the research framework and data collected can be performed using traditional regression-based first-generation statistical techniques (e.g. multiple regression analysis), there are limitations which may impact the results of the study. Therefore, Structural Equation Model (SEM) which is a second-generation technique is used to overcome the limitations of first generation techniques.

SEM seek to explain the relationships among multiple variables (Hair et al., 2010) and is also known as path analysis. This technique enables researchers to answer a set of interrelated research questions in a single systematic and comprehensive analysis by modeling simultaneously the relationships among multiple independent and dependent constructs (Gefen, Straub & Boudreau, 2000).

As the objective of the current study is to explore the relationship among variables and predict key target constructs, PLS-SEM (SmartPLS version 3.0) software has been used for achieving the research goal. Besides CB-SEM (covariance-based) approach, PLS-SEM (variance-based) is the other primary method for estimating the relationships as the goal of PLS-SEM is to predict key target constructs or identify key driver constructs. PLS is the most well-known software tool for the variance-based approach and the preferred method when the research objective is theory

development and explanation of variance (predication of constructs). To support this view, Hair, Ringle and Sarstedt (2011) recommend that if the goal is predicting key target constructs or identifying key 'driver' constructs and if the research is exploratory or an extension of an existing structural theory, PLS-SEM should be selected. On the other hand, if the goal of the study is to test, confirm or compare a theory, CB-SEM should be the tool of selection.

SEM comprises two interrelated model that can be assessed simultaneously (Urbach & Ahlemann, 2010) which are 1) The measurement model (outer model) and 2) The structural model (inner model). The study tested the measurement model (validity and reliability) and structural model (testing the relationship among variables) to finalize the outcome. Thus, PLS-SEM was selected.



#### 3.10.4.1 Assessment of Measurement Model

PLS model estimation and interpretation follows two-step process that involves a separate assessment of the measurement model and the structural model (Hair et al., 2010). The focus in assessing the measurement model is to determine the construct validity and reliability. Hair, Hult, Ringle and Sarstedt (2014), in their study, defined the construct validity as the extent to which a set of measured variable is actually measuring what it is supposed to measure based on the grounded theoretical measure. It refers to the degree of correspondence between constructs and their measures, and therefore it can be undertaken that construct validity is necessary condition for theory development and testing (Jarvis et al., 2003).

Pedhazur and Schmelkin (1991) in their study pointed that the rudimentary objective of commissioning a measurement theory is to evaluate the hypotheses and convergent validity of the constructs. To ascertain the extent to which all the independent variables and dependent variables appear to be consistent with each other was assessed in terms of homogeneity and validity. The construct validity can be established by undertaking content validity, convergent validity and discriminant validity (Hair et al., 2014).

**Convergent Validity**

Convergent validity refers to the degree where multiple items used in the research to measure the same concepts which are in agreement (Hair et al., 2014). Hair et al. (2014) posited that Convergent validity can be assessed through the three following indicators:



**(1) Factor loadings in PLS**

Hair et al. (1995) noted that the researcher interprets only those factors that are meaningful and disregards undefined or less meaningful ones. In accordance with Hair et al. (2014), the absolute standardized outer (component) loadings should be higher than 0.7. A loading of 0.70 is the level at which about half the variance in the indicator is explained by its factor and is also the level at which explained variance

must be greater than error variance. The variable which has a loading closer to 1.0, is more reliable.

**(2) Average Variance Extracted (AVE)**

AVE criterion is defined as the grand mean value of the squared loadings of the indicators associated with the construct. An AVE value of at least 0.5 and higher indicates that a latent variable is able to explain more than half of the variance of its indicators on average, therefore it is considered as sufficient (Hair et al., 2014; Henseler, Hubona & Ray, 2016). The results of AVE is shown in Chapter 4.3.7.1 Convergent Validity.



**(3) Composite Reliability (CR)**

Cronbach's alpha and Composite Reliability (CR) measures the interior reliability or consistency of the measurement for each of the hypotheses within the study (Cronbach, 1995). Churchill (1995) found that internal constancy also points to the degree to which the tool accurately and repetitively measures the intended construct in a similar pattern. In other words, if a tool can generate the same outcome repeatedly, the measure can be deliberated to be dependable. Unlike Cronbach's alpha, composite reliability does not assume that all indicators are equally reliable, making it more suitable for PLS-SEM, which is prioritize indicators according to their reliability

during model estimation (Hair et al., 2014). CR should be higher than 0.7 as suggested by Nunnally and Bernstein (1994) and Hair et al. (2014). The results of CR is shown in Chapter 4.3.7.1 Convergent Validity.

In addition to those three indicators, the measurement was checked for the degree of multicollinearity, which is a type of distortion in the data and if it is present in the data the statistical inferences concluded in regard to the data may not be reliable. Multicollinearity occurs when there is very high intercorrelations or inter-associations among the independent variables.

Amongst the reasons for there being an occurrence of multicollinearity is caused by (a) the usage of dummy variables (b) the inclusion of a variable which is computed from other variables in the data set (c) the repetition of the same kind of variable; and (d) the existence of variables which are highly correlated to each other. When a high multicollinearity exists in a data set of a particular study, the confidence intervals of the coefficients tend to become broader and the statistics tend to be very small, resulting in a difficulty to reject the null hypotheses of any study.

The evidence of data having multicollinearity may result in several problems which include: (a) the occurrence of partial regression coefficient may not be estimated precisely, resulting in a higher standard error, (b) a change in the signs likewise in the magnitudes of the partial regression coefficients from one sample to another sample; and (c) the relative importance of the independent variables in explaining the variation caused by the dependent variable becomes difficult to trace.

There are certain signals which could indicate and assist researchers detect the degree of multicollinearity. Multicollinearity can also be detected with the help of tolerance and its reciprocal, called Variance Inflation Factor (VIF). If the value of tolerance is below 0.2 or 0.1 and, simultaneously, the value of VIF 10 and above demonstrates multicollinearity issues (Hair, Anderson, Tatham & Black, 1995). The result of VIF is shown in Chapter 4.3.7.1 Convergent Validity.

**Discriminant Validity**

The second assessment of validity for reflective scale measurement in PLS is discriminant validity to examine whether two conceptually different concepts exhibit sufficient difference (Henseler et al., 2016). However, discriminant validity is only required for reflective scales measurements (Hair et al., 2014).



Discriminant validity is examined by comparing the squared correlations between constructs and the average variance extracted for a construct (Fornell & Larcker, 1981). Two measures are put forward to assess discriminant validity - the Fornell-Larcker criterion and cross loadings (Hair et al., 2014; Henseler et al., 2016). The Fornell–Larcker criterion postulates that a latent construct shares more variance with its assigned indicators than with another latent variable in the structural model.

A successful evaluation of discriminant validity shows that a test of a concept is not highly correlated with other tests designed to measure theoretically different concepts.

In showing that two scales do not correlate, it is necessary to correct for attenuation in the correlation due to measurement error.

In statistics, if the AVE of each latent variable is greater than the latent variable's higher squared correlation with other latent variable in the model, shows evidence of sufficient discriminant validity (Hair et al., 2014). As for the second criterion based on cross loading, the loading of each indicator must be greater as compared with the rest of its cross loadings to ascertain discriminant validity (Hair et al., 2014).

### 3.10.4.2 Assessment of Structural Model

The relationship between the variables that are hypothesized in the research model is represented in the structural model. Upon completion of the assessment of the measurement model, it is essential to provide evidence supporting the theoretical model as exemplified by the structural portion of the model (Chin, 2010).

The key evaluation criteria for the goodness of the structural model is the $R^2$ measures the coefficient of determination (Hair et al., 2011; Henseler et al., 2016). As the goal of PLS SEM is to explain the endogenous latent variance, the main objective is to have a higher $R^2$. The rule of thumb provided by Cohen (1988) is to have $R^2$ of 0.26 and above which is substantial while 0.02 - 0.12 is considered as weak and 0.13 - 0.25 is moderate.

Hair et al. (2011) suggested that the judgment of what $R^2$ level is high, depends on the specific research context. The individual path coefficients in the PLS structural model can also be interpreted as standardized beta coefficients of ordinary least square regression. Each path coefficient‟s significance can be accessed through a bootstrapping procedure where significant paths showing the hypothesized direction empirically supported the proposed causal relationship and vice-versa (Hair et al., 2014).

Bootstrapping in PLS is a nonparametric test which involves repeated random sampling with replacement from the original sample to create a bootstrap sample and to obtain standard errors for hypotheses testing (Hair et al., 2014). The process assumes that the sample distribution is a reasonable representation of the intended population distribution.



The bootstrap sample enables the estimated coefficients in PLS-SEM to be tested for their significance (Henseler et al., 2016). Regarding the number of re-sampling, Chin (2010) suggested to perform bootstrapping with 1000 resamples. In the current study, the $R^2$ value, standard beta, t-values via a bootstrapping procedure with a resample of 5000 and the effect sizes ($f^2$) were considered to assess the structural model (path relationship) as suggested by Hair et al. (2014). The result of the structural model is shown in 4.3.8 Assessment of the Structural Model.

# CHAPTER 4 RESULTS AND DISCUSSION

## 4.1 Introduction

This chapter exhibits the findings from the data exploration and tests of hypotheses. The discussion on the findings results fulfils the objective of the study is the focus of the chapter.

The motive for the entire research is to ascertain and determine the internal and external factors which influence the perceived timeline of XBRL adoption amongst Public Listed Companies in Malaysia. The study also examines the extend of readiness of Public Listed Companies (PLC) in Malaysia in line with SSM's intent to promote the voluntary adoption of XBRL for PLC's and Security Commission's forthcoming mandate in 2018 onwards as disclosed in the agencies website in January 2018. The entire goal of this study is to have a clear understanding of the aspects that would drive the implementation of XBRL amongst the Public Listed Companies in Malaysia.

The objective behind this research is to classify and determine the four major influences to the perceived timeline of XBRL adoption in Malaysia:

1. To examine the influence of management characteristics (namely innovativeness and knowledge) as internal factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.

2. To examine the influence of organizational characteristics (namely cost and Internet knowledge) as internal factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.
3. To examine the influence of technological characteristics (namely compatibility and relative advantage) as external factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.
4. To examine the influence of environment characteristics (namely external pressure and external support) as external factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.

This chapter will focus on the various statistical techniques of analysis used in answering the four broad research questions which guided the study. This chapter will provide clear description on the analysis conducted and explanation on the empirical results accumulated from the testing of the research hypotheses which were identified.



The study seeks to make an imperative contribution to the existing professional domain on technology adoption models by analysing the factors that would affect the perceived timeline on the take up of XBRL amongst PLC's in Malaysia.

The conclusion of this research will aid the leaders and managers of Public Listed Companies in Malaysia identify ways to increase the readiness of their organization to adopt XBRL. It will also help regulators and government agency identify areas in which they can further drive the readiness amongst Public Listed Companies.

## 4.2 Data collection process and survey responses

The data collection process started in the month of February 2016 and lasted until the end of October 2016. The researcher had to make several follow-up telephone calls and follow up visits to the selected companies to ensure an adequate number of responses were obtained per the recommended sample size provided by Krejcie and Morgan (1970). The response rate and nonresponse bias results are discussed below.

### 4.2.1 Survey Response

An aggregate number of 548 opinion polls were circulated among the Public Listed Companies in Malaysia. A sum of 284 respondents answered the survey, resulting in a response rate of 52%. The respondents who answered the survey for the actual research excludes the response from those who participated in the pilot study. During the data editing process, 28 surveys were removed as they contained incomplete responses.



Thus, only 256 surveys were usable which resulted in a 47% of the respondents being qualified and used for analysis. Based on the study by Randall and Ginson (1990), the rate of 25% falls within the common array between 21 and 50 percent as reported in the trade principles. The data on the survey response ratio is shown in Table 4.1.

Table 4.1
*Response Rate of the Questionnaires*

| Response | Frequencies/ Rate |
|---|---|
| No. of distributed questionnaires | 548 |
| Recommended Sample Size [Krejcie and Morgan (1970)] | 274 |
| Returned questionnaires | 284 |
| Returned and usable questionnaires | 256 |
| Returned and excluded Questionnaires' | 28 |
| Valid response rate (Returned and usable questionnaires/ No of distributed questionnaires) | 47% |
| Valid response rate (Returned and usable questionnaires /Recommended Sample Size) | 93% |

### 4.2.2 Non-Response Bias

Non-response bias can be defined as the form of bias displayed when some of the participants chose to leave some of the questions unanswered or fail to respond or answer the questions at all (Berg, 2005). The findings of Armstrong and Overton (1977) demonstrated that non-response bias is an issue of concern when dealing with the approach in dealing with the questionnaires.

The entire legitimacy of the survey could further be questionable with the presence of non-response bias (Tse, Tse, Yin, Ting, Yi, Yee & Hong, 1995). The size and characteristics of the sample can be affected when the respondents fail to fill up the online survey questionnaires completely or return the hard copy questionnaires. To eliminate the instances of non-response bias, the researcher distributed 548 questionnaires, which was twice the recommended sample size of 274, which was required for the study based on the Table for Determining Sample Size for a Finite Population created by Krejcie and Morgan (1970).

## 4.3 Data analysis

The statistical data analysis or techniques conducted to measure the respondents' feedback includes data editing, data coding, data transformation, Data screening and Descriptive Analytics, Reliability test, Assessment of the Measurement Model and Assessment of the Structural Model.

### 4.3.1 Data Editing

As a measure to safeguard the comprehensiveness and constancy of the data, the editing of the data was done once the collection of the survey responses from all the respondents was completed. The study by Zikmund (2003) demonstrated that data editing is part of the data dispensation and examination stage of any research. The analysis includes all responses with 75% completion of the survey and the existence of data which was omitted has been deliberated as missing values per the proposal given by Sekaran & Bougie (2013) and has been included in the discussion below.



Once the data collected from the 256 respondents were collated in an excel spreadsheet, the techniques of data editing were carried out to detect any errors in the data entry process. The responses obtained from the online survey tool was extracted directly in excel format while the responses which were collected by hand had to be manually inputted into excel using specific codes by the researcher and had to be manually collated. The manually tabulated responses which were not falling within the normal range were corrected manually by referring to the original questionnaire as most of it was resulted by keying in errors.

### 4.3.2 Data Coding

The information which was gathered from the survey and collated into the excel spreadsheet were further coded to assign numbers to each answer to facilitate the transference into SPSS, the computer aided software which was used for analysis of this thesis. The pre-coding method was applied in this study where all items in the survey were provided with special coded containing numerical values prior to circulation of the survey. Refer to Appendix for Questionnaire – Section B: Factors Influencing XBRL Adoption Timeline.

### 4.3.3 Data Transformation (Reverse Coding)

There was a need to transform one of the data via reverse coding to maintain the consistency in the meaning of a response where a higher score would indicate a negative meaning or negatively influence the relationship of the Independent Variable (IV) towards the Dependent Variable (DV). The item which was reverse coded for this study was one of the item of the DV, PTAX3 to RePTAX3.

### 4.3.4 Data Screening and Descriptive Analysis

Upon completion of the editing and coding process, the data collected were subjected to data screening and preliminary analysis using the Statistical Package for Social Sciences (SPSS), version 22.0 for Windows prior to proceeding with the detailed analysis and hypotheses testing.

The data screening/ cleaning including the preliminary analysis was conducted to ensure that the recording of information have been done precisely. The first step to screening the data was via the running of the descriptive analysis to screen for missing data. Following the clear guideline by Pallant (2013) the first step was descriptive analysis to report the characteristics of the sample and responses.

Data inspection or screening was carried out to assess if there are any risks of human error during data entry and ensure that information have been entered correctly. The process also helps ascertain if there are values which have been omitted and deciding how to deal with the missing values.

#### 4.3.4.1 Treatment of Missing Data

Missing data is usually referred to the occurrence when one or more of the queries in the questionnaire was not responded by the participant of the poll. The findings of Hair et.al (1995) posited that it is a common sight to attain data sets with a couple of missing data. Tabachnick and Fidell (2001) have recommended evaluating the extent to which the data is missing in a survey because missing data will lead to prejudiced approximations of outcomes. Based on the study by Churchill (1995), an amount of 5% or lower of absent data is deliberated as tolerable.

A typical approach in treating missing data is to replace the missing data with the mean substitution or adjustable mean answers because it is considered the best suitable method and widely accepted method in treating missing data (Hair, Black,

Babin & Anderson, 2010). Mean substitution is grounded on useable answers that results in the mean being the best single replacement of missing data.

In the context of this study, after the exclusion of 28 questionnaires which were found to be incomplete, the results of the data which was screened using the SPSS software showed that there were no evidence of the data set containing any variable that had missing data. So, no further treatment on missing values was necessary as there was no missing values to be dealt with. There was also no obligation to measure the arrangement of missing data.

#### 4.3.4.2 Demographic Profiles of respondents

As discussed under Methodology, the respondents for this study comprised of Senior executives and managers of Public Listed Companies in Peninsular Malaysia will be the target population of the study. Senior executives and managers were chosen because they represent the top managers as revealed by the study done by Damanpour and Schneider (2006) that this group are the most influential people affecting innovation and change in organizations for this study. In this section, characteristics of the respondents in terms of job level, current experience, overall experience, age, race, education level and industry will be discussed. The demographic profiles of the respondents are discussed below.

**(1) Job Level of respondents**

As the target population for this study comprised of Senior executives and managers of Public Listed Companies in Peninsular Malaysia, most the respondents were Managers (48.8%), followed by Executives (29.3%) and followed by Top Management (21.9%). It was very difficult to get in touch with the top management of the companies' due to protocols and their schedule.

Table 4.2
*Job Level*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Job Level | Top Management | 56 | 21.9 |
| | Managers | 125 | 48.8 |
| | Executives | 75 | 29.3 |



**(2) Current Experience of Respondents**

The majority of the participants who participated in the study encompassed people who were in their current roles for less than 5 years (73.0%). The remaining respondents comprised of those who were in the company between 5 to 10 years (22.7%) and followed by slightly more than a handful who has remained with the establishment for over 10 years (4.3%).

Table 4.3
*Current Experience*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Current Experience | Below 5 yrs | 187 | 73.0 |
| | Between 5-10 yrs | 58 | 22.7 |
| | Above 10 yrs | 11 | 4.3 |

### (3) Overall Experience of Respondents

With the target population being Senior executives from Public Listed Companies, most of the respondents comprised of people who has had an overall working experience of more than 20 years (47.3%), followed by those who have between 10 to 20 years of overall experience (40.6%) and followed by those who have had less than 10 years of overall experience of less than 10 years (12.1%).

Table 4.4
*Overall Experience*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Overall Experience | Below 10 yrs | 31 | 12.1 |
| | Between 10-20 yrs | 104 | 40.6 |
| | Above 20 yrs | 121 | 47.3 |

### (4) Age of Respondents



Most of the respondents for this study comprised of people between the age of 36 to 55 years (85.9%), followed by those who were below 35 years of age (12.9%) and a handful of those who were more than 55 years old (1.2%).

Table 4.5
*Age*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Age | Below 35 yrs | 33 | 12.9 |
| | Between 36-55 yrs | 220 | 85.9 |
| | Above 55 yrs | 3 | 1.2 |

### (5) Race of Respondents

The respondents for this study were mainly from the three ethnicities in Malaysia, with the majority being Chinese (45.3%), followed by Malays (28.9%) and Indians (20.3%) and a handful of other ethnic groups.

Table 4.6
*Race*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Race | Malay | 74 | 28.9 |
| | Chinese | 116 | 45.3 |
| | Indian | 52 | 20.3 |
| | Others | 14 | 5.5 |

### (6) Education Level of Respondents

The respondents were mainly graduates (41.0%) and followed by those who have Professional Certification and Masters (29.3% and 25.4%) respectively. Diploma holders were a small fraction (3.5%) and the least was those who either had a Doctorate or Ph.D. (0.8%).

Table 4.7
*Education Level*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Education Level | Diploma | 9 | 3.5 |
| | Graduate | 105 | 41.0 |
| | Masters | 65 | 25.4 |
| | DBA/ PHD | 2 | 0.8 |
| | Professional | 75 | 29.3 |

### (7) Industry of Respondents

The demographics by industry of the respondents showed that more than half of the respondents were from the Service industry (66.4%) while those from the Manufacturing industry (16.8%) and followed by those from the Oil & Gas, Retail, and Construction (7.0%, 6.6% and 3.1%).

Table 4.8
*Industry of Respondents*

| Measure | Item | Frequency | Percentage (%) |
|---|---|---|---|
| Industry | Manufacturing | 43 | 16.8 |
| | Oil & Gas | 18 | 7.0 |
| | Construction | 8 | 3.1 |
| | Retail | 17 | 6.6 |
| | Service | 170 | 66.4 |

The descriptive analysis shows the samples obtained for the study has a balanced representation of participants based on the fundamental features analysed within the study which are the job level of respondents, current and overall experience of respondents, the age of respondents, race of respondents, education level of respondents and industry of respondents. Hence, the results can be extended to a larger population.

#### 4.3.4.3 Descriptive Analysis of the Construct Items

Senior executives and managers from the Finance Departments of PLC's in Malaysia were required to participate in a controlled survey to elicit further findings on the internal and external factors that influence the perceived timeline of XBRL adoption by PLC's in Malaysia. The questionnaire contained various sections, each with a set of items measuring the internal and external factors within four dimensions comprising of management characteristics, organization characteristics, technological characteristics and environmental characteristics.

The management characteristics and organization characteristics dimension comprised of two constructs each based on the findings gathered during the literature review phase on both the dimensions. The two constructs that make up management characteristics are Management Innovativeness (MI) and Management Knowledge (MK) while Cost (CO) and Internet Knowledge (IK) make up the constructs for organization characteristics.

Technological characteristics comprised of Compatibility (CM) and Relative Advantage (RA). External Pressure (EP) and External Support (ES) formed the constructs for Environmental characteristics. At the start, the process to identify the overall hypotheses was carried out and followed by the analysis of each of the variables.

As disclosed in Section 3.6 Measurement of Variables/ Instrumentation, all eight observed variables were measured using the 4-point Likert scale of ‘Strongly disagree' to ‘Strongly agree', with a midpoint of 2.5 assigned to indicate the neutrality between the agree and disagree opinions for each statement. The mean and standard deviation for each of the hypotheses are disclosed in Table 4.9.

Cost (CO) received the highest mean score 3.128 and was followed by Management Knowledge (MK) of 2.807. The constructs with the lowest mean scores were External Pressure (EP) and Relative Advantage (RA) with mean scores of 2.417 and 2.238 respectively. This implies that the top 5 items that are likely to have the highest impact on the perceived timeline to adopt XBRL are Cost, Management Knowledge, Management Innovativeness, Compatibility and Internet Knowledge. Further tests will be performed on these variables.



Table 4.9
*Descriptive Analysis (Constructs)*

| Scale Items of Overall Constructs | Mean | Standard Deviation |
|---|---|---|
| Management Innovativeness (MI) | 2.783 | 0.431 |
| Management Knowledge (MK) | 2.807 | 0.606 |
| Cost (CO) | 3.128 | 0.564 |
| Internet Knowledge (IK) | 2.766 | 0.514 |
| Compatibility (CM) | 2.769 | 0.401 |
| Relative Advantage (RA) | 2.238 | 0.425 |
| External Pressure (EP) | 2.417 | 0.461 |
| External Support (ES) | 2.517 | 0.426 |
| Perceived Timeline to Adopt XBRL (PTAX) | 2.427 | 0.550 |

### 4.3.5 Reliability test

Per Nunnally (1967), all Cronbach's Alpha coefficient (α) values higher than 0.6 are acceptable. Thus, it can be concluded again that the questionnaires used in this survey are consistent, reliable, stable and accurate. Cronbach's alpha is the most common method used in assessing reliability (Nunnally 1978; Sekaran & Bougie 2013). The closer Cronbach's alpha is to 1.0, the higher the internal reliability while Cronbach's alpha of less than 0.5 is generally considered to be poor, values above .7 are considered good but it is preferable to have values above .8 is considered to be good for consistency of data (Sekaran & Bougie 2013).

The reliability of the variables for this study was tested empirically and the results of the Construct Reliability and Validity report demonstrates that the minimum Cronbach's alpha is 0.630 for Cost (CO) and maximum is 0.960 for Internet Knowledge (IK), per the Table 4.10 below. The summarised results of the reliability analysis confirmed that all the scales display satisfactory level of reliability. Per the results below, the Cronbach's alpha for Management Innovativeness, Management Knowledge, Cost, Internet Knowledge, Compatibility, Relative Advantage, External Pressure, External Support and XBRL Adoption Readiness are all above 0.6 acceptable range for Reliability analysis for every variable per Nunnally (1967). Cronbach's Alpha reading for each of the nine variables showed a value which is above 0.6 indicated they are consistently measuring what they are supposed to measure.

Table 4.10
*Cronbach's Alpha Coefficient of the Actual Study (N=256)*

| Variables | Cronbach's Alpha | No of Items | Strength |
|---|---|---|---|
| **Management Characteristics** | | | |
| Management Innovativeness (MI) | 0.893 | 6 | Very Good |
| Management Knowledge (MK) | 0.956 | 6 | Excellent |
| **Organizational Characteristics** | | | |
| Cost (CO) | 0.630 | 3 | Moderate |
| Internet Knowledge (IK) | 0.960 | 3 | Excellent |
| **Technological Characteristics** | | | |
| Comparability (CM) | 0.879 | 3 | Very Good |
| Relative Advantage (RA) | 0.702 | 5 | Good |
| **Environmental Characteristics** | | | |
| External Pressure (EP) | 0.760 | 5 | Good |
| External Support (ES) | 0.685 | 4 | Moderate |
| Perceived Timeline to Adopt XBRL (PTAX) | 0.695 | 3 | Moderate |



### 4.3.6 Assessment of sample size and Total Variance Explained

#### (1) Sampling Adequacy

Table 4.11
*Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity for all of the variables*

| | |
|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | .854 |
| Approx. Chi-Square | 9671.874 |
| Df | 703 |
| Sig. | 0.000 |

Table 4.11 above shows the summary of the results (initial values with all items) with KMO Sampling Adequacy for the entire model is at .854 (greater than .7) and

Bartlett's Test of Sphericity Sig. less than .000 for all variables in the model. These results indicated the researcher can proceed with further analysis.

**(2) Total Variance Explained (Common Method Variance Test)**

To evaluate if there are any CMV in the data set, all the constructs (9 variables) from the questionnaire in the research framework for the study were tested using the factor analysis in SPSS. The "Initial Eigenvalues" column within the Total Variance Explained table shows the amount of variance each component accounts for plus its contribution towards each total variance is presented.

The results for the CMV test showed that 4 factors were extracted with a cut-off eigenvalue greater than 1. The total variance explained by the 4 variables was 84.121 percent and is well above the prescribed specification of 50 percent. The first factor captured 42.92 percent of the total variance which is below 50 percent as proposed by Podsakoff and Organ (1986), indicating that there is no response bias in the data. As there was no indication of a single factor emerged and the first factor did not account for most of the variance, it could be concluded that there was no concern of CMV in this study. Refer to Appendix 4.3 Total Variance Explained.

### 4.3.7 Assessment of the Measurement Model

The convergent validity and discriminant validity was examined to assess the measurement model.

#### 4.3.7.1 Convergent Validity

Convergent validity for this study was determined by factor loadings from PLS, AVE and CR. The factor loading of all the items are above 0.5, the AVEs of all the variables are higher than 0.5 and CR is above 0.7 as presented in the appending sections. Thus, the convergent validity for scale measurement is fulfilled per the rule of thumb described in Chapter 3.10.4.1 Assessment of Measurement Model.

**Factor Loadings from PLS**

The following sections presents the results by each construct, where the minimum factor loading of items is 0.642 for EP4 and maximum is 0.983 for IK3.



**(1) Factor Loadings for Management Innovativeness (MI)**

Management Innovativeness (MI) construct was measured using 6 items which were all positively worded. The factor loading was examined for the 6 items to determine which items should be extracted. Three items were deleted due to cross loading. In other words, the first three factors were undefinable, and the present study only interprets those factors representing meaningful relationships. Thus, for this study, only three of the six items were identified as meaningful items.

The results of the factor loadings for the remaining three items are presented in Table 4.12 below, where all the factor loadings are above 0.8.

Table 4.12
*Summary of Factor Loadings for Management Innovativeness (MI) construct*

| Factor Loading | Component |
|---|---|
| | 1 |
| Factor 1: Management Innovativeness (MI) | |
| MI4. I have/ Management has fresh perspective on old problems. | .942 |
| MI5. I have/ Management would create something new rather than improve something. | .831 |
| MI6. I have/ Management often risk doing things differently. | .937 |

**(2) Factor Loadings for Management Knowledge (MK)**

The factor loading was examined for the six items of the Management Knowledge (MK) construct to determine which items should be extracted. No item was deleted as all the factor loadings are above 0.8 and there was no cross loading. The results are presented in the following table.



Table 4.13
*Summary of Factor Loadings for Management Knowledge (MK) construct*

| Factor Loading | Component |
|---|---|
| | 1 |
| Factor 2: Management Knowledge (MK) | |
| MK1. I would rate my own/ Management understanding of technologies as very good compared to other people in similar positions. | .866 |
| MK2. I have/ Management have formal qualifications in XBRL (attended workshop or training on XBRL). | .894 |
| MK3. XBRL increases the productivity of employees. | .892 |
| MK4. My employees find XBRL easy to use for reporting and decision-making. | .916 |
| MK5. I have/ Management has seen what other global Public Listed Companies have achieved with XBRL. | .904 |
| MK6. XBRL makes financial information easier to analyse. | .963 |

### (3) Factor Loadings for Cost (CO)

The factor loading was examined for the three items of the Cost (CO) construct to determine which items should be extracted. CO3 was deleted as the factor loadings was below 0.6 while the rest of the items has a loading of above 0.8. The results are presented in the following table.

Table 4.14
*Summary of Factor Loadings for Cost (CO) construct*

| Factor Loading | Component |
|---|---|
| | 1 |
| Factor 3: Cost (CO) | |
| CO1. The cost of adopting XBRL is far greater than the benefits. | .864 |
| CO2. The cost of maintenance and support of XBRL are very high for our company | .844 |

### (4) Factor Loadings for Internet Knowledge (IK)



The factor loading was examined for the three items of the Internet Knowledge (IK) construct to determine which items should be extracted. IK1 was deleted as the factor loadings was below 0.6 while the rest of the items has a loading of above 0.9. The results are presented in the following table.

Table 4.15
*Summary of Factor Loadings for Cost (CO) construct*

| Factor Loading | Component |
|---|---|
| | 1 |
| Factor 4: Internet Knowledge (IK) | |
| IK2. There is at least one employee who is a computer expert. | .983 |
| IK3. I would rate my/ the employees' understanding of internet and technology as very good compared with other companies in the same industry. | .978 |

### (5) Factor Loadings For Compatibility (CM)

The factor loading was examined for the three items of the Compatibility (CM) construct to determine which items should be extracted. CM2 was deleted as the factor loadings was below 0.6 while the rest of the items has a loading of above 0.9. The results are presented in the following table.

Table 4.16
*Summary of Factor Loadings for Compatibility (CM) construct*

| Factor Loading | Component |
|---|---|
| | 1 |
| Factor 5: Compatibility (CM) | |
| CM1. The adoption of XBRL is consistent with the values, beliefs and business needs of our company. | .967 |
| CM3. There is no or only minimal resistance to change from our staff. | .917 |

### (6) Factor Loadings for Relative Advantage (RA)



The factor loading was examined for the five items of the Relative Advantage (RA) construct to determine which items should be extracted. Two items were deleted due to low loading and cross loading. The results are presented in the following table.

Table 4.17
*Summary of Factor Loadings for Relative Advantage (RA) Construct*

| Factor Loading | Component |
|---|---|
| | 1 |
| Factor 6: Relative Advantage (RA) | |
| RA 1. Our company is satisfied with the use of internet and technology in the business. | .697 |
| RA 2. Technology adoption has enhanced the corporate image of our company. | .937 |
| RA 5. Internet and technology adoption has helped reduce the costs of information marketing and advertising, customer service and support, information gathering and telecommuting. | .710 |

### (7) Factor Loadings for External Pressure (EP)

External Pressure (EP) construct were measured using five items. The factor loading was examined for the items to determine which items should be extracted. One item was deleted due to cross loading. The results are presented in the following table.

Table 4.18
*Summary of Factor Loadings for External Pressure (EP) Construct*

| Factor Loading | Component |
|---|---|
| | 1 |
| Factor 7: External Pressure (EP) | |
| EP 1. Competition is a factor in our decision to adopt XBRL. | .746 |
| EP 2. Social factors are important in our decision to adopt XBRL. | .778 |
| EP 4. Our industry is pressuring us to adopt XBRL. | .642 |
| EP 5. Our organization is pressured by government to adopt | .852 |

### (8) Factor Loadings for External Support (ES)

The factor loading was examined for the four items of the External Support (ES) construct to determine which items should be extracted. One item was deleted due to the low loading and cross loading. All remaining items have factor loadings which are above 0.6. The results are presented in the following table.

Table 4.19
*Summary of Factor Loadings for External Support (ES) Construct*

| Factor Loading | Component |
|---|---|
| | 1 |
| Factor 8: External Support (ES) | |
| ES 2. There are business partners who provide training on XBRL | .766 |
| ES 3. Technology vendors actively market XBRL by providing incentives and subsidies for adoption. | .662 |
| ES 4. Technology vendors promote XBRL by offering free awareness workshops, training sessions and technical support for effective XBRL adoption | .881 |

### (9) Factor Loadings for Perceived Timeline to Adopt XBRL (PTAX)

The factor loading was examined for the three items of the Perceived Timeline to Adopt XBRL (PTAX) construct to determine which items should be extracted. No item was deleted as all items have factor loadings which are above 0.6. The results are presented in the following table.

Table 4.20
*Summary of Factor Loadings for Perceived Timeline to Adopt XBRL (PTAX) Construct*

| Factor Loading | Component |
|---|---|
| | 1 |
| Factor 9: Perceived Timeline to Adopt XBRL (PTAX) | |
| PTAX 1. My company intends to adopt XBRL right now | .816 |
| PTAX 2. My company will be ready to adopt XBRL in a year's time | .787 |
| PTAX 3. If my company could, my company would like to not adopt XBRL | .760 |



**Average Variance Extracted (AVE), Composite Reliability (CR) and Variance Inflation Factor (VIF)**

Besides the Factor Loading examination for all the constructs, analysis to derive the Average Variance Extracted (AVE), Composite Reliability (CR) and Variance Inflation Factor (VIF) was performed. The results are demonstrated in Table 4.21 below.

The table 4.21 below demonstrates that AVE is ranged between 0.575 and 0.961 with lowest is for External Pressure (EP) and highest is for Internet Knowledge (IK). The minimum value for CR is 0.817 for External Support (ES) and maximum is 0.98 for Internet Knowledge (IK).

Table 4.21
*Results of Convergent Validity Indicators*

| Variables | AVE | CR | VIF |
|---|---|---|---|
| **Management Characteristics** | | | |
| Management Innovativeness (MI) | 0.819 | 0.931 | 6.282 |
| Management Knowledge (MK) | 0.821 | 0.965 | 8.895 |
| **Organizational Characteristics** | | | |
| Cost (CO) | 0.730 | 0.844 | 4.667 |
| Internet Knowledge (IK) | 0.961 | 0.980 | 2.610 |
| **Technological Characteristics** | | | |
| Comparability (CM) | 0.888 | 0.941 | 1.356 |
| Relative Advantage (RA) | 0.622 | 0.829 | 2.795 |
| **Environmental Characteristics** | | | |
| External Pressure (EP) | 0.575 | 0.843 | 2.864 |
| External Support (ES) | 0.601 | 0.817 | 2.667 |
| Perceived Timeline to Adopt XBRL (PTAX) | 0.621 | 0.831 | |

The convergent validity is assessed by examining the indicators weight, significance of weight, and multicollinearity of indicators (VIF) suggested by Hair et al. (2014). VIF is ranged between 1.356 for Comparability (CM) and 8.895 (Management Knowledge). A VIF between 5 and 10 indicates high correlation, where 10 is the maximum level which is accepted by Hair, Anderson, Tatham, & Black (1995). Collinearity problem occurs when the VIF is greater than 10. Based on the above table 4.21, all the VIF is below 10. Therefore, there was no collinearity issues noted within the data used for this research.

#### 4.3.7.2 Discriminant Validity

After convergent validity, the discriminant validity is tested through cross loadings of correlations as proposed by Fornell and Larcker (1981) criterion. The criteria developed by Igbaria et al.'s (1996) was used in the present study for cross loading, that is, a given item should load 0.50 or higher on a specific factor and have a cross loading no higher than 0.35 on other factors.

Table 4.22
*Results of Discriminant validity of constructs, Fornell-Larcker criterion*

| | MI | MK | CO | IK | CM | RA | EP | ES | PTAX |
|---|---|---|---|---|---|---|---|---|---|
| MI | **0.905** | | | | | | | | |
| MK | 0.896 | **0.906** | | | | | | | |
| CO | 0.805 | 0.819 | **0.854** | | | | | | |
| IK | 0.602 | 0.609 | 0.707 | **0.980** | | | | | |
| CM | -0.143 | -0.039 | -0.157 | -0.273 | **0.942** | | | | |
| RA | 0.389 | 0.545 | 0.400 | 0.150 | 0.322 | **0.789** | | | |
| EP | 0.453 | 0.618 | 0.431 | 0.219 | 0.100 | 0.739 | **0.758** | | |
| ES | 0.634 | 0.680 | 0.618 | 0.224 | 0.097 | 0.566 | 0.584 | **0.775** | |
| PTAX | 0.628 | 0.648 | 0.576 | 0.632 | -0.324 | 0.333 | 0.480 | 0.250 | **0.788** |

Note: Diagonals (in bold) represent the squared root of average variance extracted (AVE) while the other entries represent the correlations.
MI=Management Innovativeness, MK=Management Knowledge, CO=Cost, IK=Internet Knowlege, CM=Compatibility, RA=Relative Advantage, EP=External Pressure, ES=External Support, PTAX=Perceived Timeline to Adopt XBRL.

Based on the results shown in Table 4.22 above, there is no cross loading among items. Assessment of convergent validity indirectly indicates that criterion validity is satisfied (Zikmund & Babin, 2007). Therefore, in this study, the criterion validity was assumed to be accounted for, at the moment convergent validity is satisfied (Zikmund & Babin, 2007).

The results indicate that the squared correlations for each construct is less than the average variance extracted by the indicators measuring that construct indicating adequate discriminant validity. Therefore, the discriminant validity criteria are fully satisfied namely similar latent variables were classified with high loadings and dissimilar variables were classified with very low loadings. Overall, the measurement model demonstrated adequate convergent validity and discriminant validity (Table 4.22).

### 4.3.8 Assessment of the Structural Model

As suggested by Hair et al. (2014), the $R^2$ value, beta, t-values via a bootstrapping procedure with a resample of 5000 and the effect sizes ($f^2$) were considered in order to assess the structural model (path relationship).



Table 4.23
*Results of Structural Model*

| Relationships | Beta | Std. Deviation | T-value | $f^2$ | P value | Decision |
|---|---|---|---|---|---|---|
| MI -> PTAX | 0.306 | 0.112 | 2.731** | 0.044 | 0.003 | Supported |
| MK -> PTAX | 0.213 | 0.113 | 1.877* | 0.015 | 0.030 | Supported |
| CO -> PTAX | -0.041 | 0.093 | 0.445 | 0.001 | 0.328 | Not Supported |
| IK -> PTAX | 0.275 | 0.076 | 3.617** | 0.085 | 0.000 | Supported |
| CM -> PTAX | -0.240 | 0.053 | 4.516 | 0.124 | 0.000 | Not Supported |
| RA -> PTAX | 0.123 | 0.099 | 1.236 | 0.016 | 0.108 | Not Supported |
| EP -> PTAX | 0.304 | 0.078 | 3.912** | 0.095 | 0.000 | Supported |
| ES -> PTAX | -0.349 | 0.126 | 2.763 | 0.133 | 0.003 | Not Supported |
| R2 | 0.658 | | | | | |
| Adjusted R2 | 0.647 | | | | | |

* = significant at $p < 0.05$ level, ** = significant at $p < 0.01$ level

Per the results demonstrated in the Table 4.23 above, the perceived timeline to Adopt XBRL variable is tested using the coefficient of determination ($R^2$) and level of significance of the path coefficients (beta values) (Hair et al., 2014). The $R^2$ value for the perceived timeline to adopt XBRL is 0.658, which is above 0.26 as suggested by Cohen (1988), indicating that 65.8% of the variance in the perceived timeline to adopt XBRL can be explained by the internal and external factors examined within the study. Therefore, the instrument is not nullified and remains valid.

Following the guideline from Cohen (1988), the effect size ($f^2$) of 0.02, 0.15, and 0.35, respectively as shown in Table 4.23, represent small, medium, and large effects as described in Chapter 3.10.4.2 Assessment of Structural Model. The results show that there are three relationships which are in between the small and medium cut-off value of 0.02 to 0.15 for Management Innovativeness (MI) with a value of 0.044, Internet Knowledge (IK) with a value of 0.085 and External Pressure (EP) with a value of 0.095. Although the t-values for the relationships is significant and acceptable, there is one relationship with the effect size of significantly lesser than the cut-off value of 0.02 which is Cost (CO) with a value of 0.001 which is interpreted as a very poor predictor of the perceived timeline to adopt XBRL.

In line with Hair et al. (2017), we used commonly critical value for two-tailed tests as 1.96 (significance level = 5%) and 2.57 (significance level = 1%), and for one-tailed tests as 1.65 (significance value = 5%) and 2.33 (significance level = 1%). The path coefficients results of the direct effects show that four relationships are significant as shown in Table 4.23 above.

The details of the direct effects are described in detail as follows:

H1 The result of the path coefficients shows the direct effect (one-tailed tests) of Management Innovativeness (MI) on the perceived timeline to adopt XBRL (PTAX) has positive relationship ($\beta$=0.306 and $p<0.01$). The result signifies that Organisation with a higher Management Innovativeness (MI) are more likely to have a positive influence on the perceived timeline to adopt XBRL.

H2 The results show that Management Knowledge (MK) has positive relationship on the perceived timeline to adopt XBRL (PTAX) ($\beta$= 0.213 and $p<0.05$). The result signifies that Organisation with a higher management knowledge (MK) has a positive influence on the perceived timeline to adopt XBRL.

H3 The results of the study show Cost (CO) doesn't have a direct negative effect on the perceived timeline to adopt XBRL (PTAX).

H4 The result of the path coefficients shows the direct effect of Internet Knowledge (IK) on the perceived timeline to adopt XBRL (PTAX) has positive relationship ($\beta$=0.275 and $p<0.01$). The result signifies that Organisations with higher Internet Knowledge (IK) has a positive influence on the perceived timeline to adopt XBRL.

H5 The results of the study show Compatibility (CM) doesn't have a direct positive effect on the perceived timeline to adopt XBRL (PTAX), instead, the results showed a

negative influence on the Dependent Variable. Thus, the hypotheses made in Chapter 3 was not supported.

H6 The results of the study show Relative Advantage (RA) doesn't have a direct positive effect on the perceived timeline to adopt XBRL (PTAX).

H7 The result of the path coefficients shows the direct effect of External Pressure (EP) on the perceived timeline to adopt XBRL (PTAX) has positive relationship ($\beta$=0.304 and $p<0.01$). The result signifies that Organisations with higher External Pressure (EP) has a positive influence on the perceived timeline to adopt XBRL.

H8 The results of the study show External Support (ES) doesn't have a direct positive effect on the perceived timeline to adopt XBRL (PTAX), instead, the results showed a negative influence on the Dependent Variable. Thus, the hypotheses made in Chapter 3 was not supported.



### 4.3.9 Summary of Hypotheses

Once all constructs in the measurement model (stage one) are proved to be reliable and valid (Anderson & Gerbing, 1988), a structural model can then be tested and presented as a second and main stage of the analysis. The purpose of the structural model in this thesis is to test the underlying hypotheses to answer the research questions outlined in Chapter one.

There were 8 hypotheses developed to answer the research questions outlined in chapter one. The results are found to support four (4) of the eight (8) hypotheses and the remaining four (4) hypotheses were rejected.

Table 4.24 summarizes the results and subsequently, the implications of these outcomes are further discussed in the following chapter.

Table 4.24
*Summary of Hypotheses Testing*

| Hypotheses | Direct Relationships | Result |
|---|---|---|
| H1 | Organisation with a higher Management Innovativeness (MI) are more likely to have a positive influence on the perceived timeline to adopt XBRL. | Supported |
| H2 | Organisation with a higher management knowledge (MK) has a positive influence on the perceived timeline to adopt XBRL. | Supported |
| H3 | Cost (CO) will negatively influence the perceived timeline to adopt XBRL. | Not Supported |
| H4 | Organisations with higher Internet Knowledge (IK) has a positive influence on the perceived timeline to adopt XBRL. | Supported |
| H5 | Compatibility (CM) with the Public Listed Companies will positively impact the perceived timeline to adopt XBRL. | Not Supported |
| H6 | The higher the Relative Advantage (RA), the more positive influence on the perceived timeline to adopt XBRL. | Not Supported |
| H7 | There is a positive relationship between External Pressure (EP) and perceived timeline to adopt XBRL. | Supported |
| H8 | There is a positive relationship between External XBRL Support (ES) and perceived timeline to adopt XBRL. | Not Supported |

## 4.4 Conclusion

This chapter describes in detail the data analysis process right from the data collection process and screening, how the survey response rates were analyzed and the data were tested via a series of analysis which includes descriptive analysis and the relevant assessments of the measurement and structural model to validate data for associations and predictions. The results revealed that there was a direct relationship between four of the independent variables and the dependent variable per the summary of Hypotheses in Chapter 4.3.9. Further discussions on the results and implications of the findings are covered in Chapter 5.

# CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

This chapter provides a summary of the study, comprehensive deliberations, discoveries obtained from this study, contributions, as well as the drawbacks and future research oversight. The detailed discussion on the findings is to address the objectives listed in Chapter One while the analysis performed were based on the approaches elaborated in Chapter Three of the study. The contribution that follows the discoveries of the study is in line with the literature review which has been documented in Chapter Two. In Chapter Four, the detailed results of the analysis are disclosed.

This chapter is tabulated as per following: The summary of the major findings of this study are presented in Section 5.2, followed by Section 5.3 that provides the detailed discussions of the findings of the study. Where else in Section 5.4 the contributions of the study are explained in detail, Section 5.5 deliberates on the limitations and 5.6 covers the suggestions for future research.

## 5.2 Summary of Study

The justification for this study is to recognize and determine both the internal and external factors influencing the perceived timeline to adopt XBRL amongst Public Listed Companies in Malaysia. The four main objectives of the study is to classify and determine the four major influences to the perceived timeline of XBRL adoption in Malaysia:

1. To examine the influence of management characteristics (namely innovativeness and knowledge) as internal factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.
2. To examine the influence of organizational characteristics (namely cost and Internet knowledge) as internal factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.
3. To examine the influence of technological characteristics (namely compatibility and relative advantage) as external factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.
4. To examine the influence of environment characteristics (namely external pressure and external support) as external factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia.

As XBRL is a new reporting technology which constitutes the basis for global integrated reporting, there are very limited studies specific to XBRL globally as well as in Malaysia. It is deliberated as a new area and there are still enormous areas for further research (Alles & Debreceny, 2012; Alles & Piechocki, 2012).

Studies on awareness (Illias, 2014), intention for re-use of data (Ilias, Razak & Razak, 2014), expectation of perceived benefit (Ilias, Razak & Rahman, 2015), diffusion of XBRL innovation model (Al-Rawashdeh, 2011) and intention to adopt XBRL-based digital reporting (Ashari, 2010) has been conducted in Malaysia but there has not been any study on the factors influencing the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia. Hence, research in this area is very much due.

In the light of the problem of this research and the detailed assessment of the relevant literature conducted in Chapter 2, this research was guided by two broad research questions:

RQ 1. What is the influence of management characteristics (namely innovativeness and knowledge) as internal factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia?

RQ 2. What is the influence of organizational characteristics (namely cost and Internet knowledge) as internal factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia?

RQ 3. What is the influence of technological characteristics (namely compatibility and relative advantage) as external factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia?

RQ 4. What is the influence of environment characteristics (namely external pressure and external support) as external factors on the perceived timeline to adopt XBRL amongst Public Listed Companies' in Malaysia?

The result signifies that internal factors such as management and organisation characteristics along with and external environmental factor such as External Pressure has a significant influence on the perceived timeline to adopt XBRL. Organisation which has Management Characteristics namely higher Management Innovativeness (MI) and Management Knowledge (MK) characteristics are more likely to have a positive influence on the perceived timeline to adopt XBRL.

Organisation which has higher Internet Knowledge (IK) has a positive influence on the perceived timeline to adopt XBRL. However, the results showed that the other Organisation characteristic which was tested during this study Cost (CO), doesn't have a direct effect on the perceived timeline to adopt XBRL (PTAX). External technological characteristics such as Comparability (CM) and Relative Advantage (RA) doesn't have a direct effect on the perceived timeline to adopt XBRL (PTAX). The results showed that there is a positive relationship between External Pressure (EP) which is an external environmental characteristic and perceived timeline to adopt XBRL, while External Support (ES) which is the other External Environmental variable doesn't have a direct effect on the perceived timeline to adopt XBRL (PTAX).

The results of the analysis supported hypotheses H1, H2, H4 and H7, thereby answering all the research questions and objectives. In order to understand the findings on the Perceived Timeline to Adopt XBRL amongst the Public Listed Companies in Malaysia, the mean value of each of the construct item was calculated

to understand and analyse the Perceived Timeline per item by Job Level of the respondents.

As disclosed in Section 3.6 Measurement of Variables/ Instrumentation, the variables were measured using the 4-point Likert scale of ‘Strongly disagree' to ‘Strongly agree', with a midpoint of 2.5 assigned to indicate the neutrality between the agree and disagree opinions for each statement. Based on the descriptive analytics per Table 5.1 below, the results demonstrate that all three job levels responded as not having an intent or being ready to adopt XBRL right now as the mean value/ average by all job levels were below the assigned midpoint of neutrality, with a mean between 2.33 and 2.41. However, the analysis showed that all three levels would be more inclined to say that their companies would be ready to adopt XBRL in a year’s time with the Top Management, who are also the ultimate decision makers in the companies having the highest mean of 2.64. The managers and executives seem to be in almost a neutral position with the mean value of 2.53 for both job levels.



On a flip side, the results of the study demonstrated that there is a high resistance to technology adoption such as XBRL amongst the management of the Public Listed Companies in Malaysia. The Top Management and Managers of the companies indicated that they would like to further delay the time to adopt XBRL after one year or later (if they could), as the mean value calculated for this item was 2.66 and 2.78, respectively. The executives on the other hand seem to be more inclined to technology adoption with a mean value of 2.48, which is lower than the assigned midpoint,

indicating that they disagree in further delaying XBRL adoption to more than a year or later.

Per the demographic profiles of the respondents for this study in Section 4.3.4.2, it shows that most the respondents were Managers (48.8%), followed by Executives (29.3%) and followed by Top Management (21.9%). As the number of managers who responded in this study form about 50% of the entire returned surveys, the response by the managers indicates a high resistance to adopt XBRL amongst the Public Listed Companies. This is an alarming indication of the state of technology acceptance amongst Public Listed Companies as the managers form the main executor group within an organisation who are responsible to drive and roll out any new changes within the companies and the ones who interact with the ground level employees.

Table 5.1
*Mean of Perceived Timeline per item by Job Level*

| | Top Management | Managers | Executives |
|---|---|---|---|
| PTAX 1. My company intends to adopt XBRL right now | 2.34 | 2.41 | 2.33 |
| PTAX 2. My company will be ready to adopt XBRL in a year's time | 2.64 | 2.53 | **2.53** |
| PTAX 3. If my company could, my company would like to further delay the time to adopt XBRL after one year or later | **2.66** | **2.78** | 2.48 |

## 5.3 Discussion of Findings

In this study, the main objectives are to examine the influence of management and organisational characteristics as internal factors and technological and environmental characteristics as external factors on the perceived timeline to adopt XBRL Amongst Public Listed Companies' in Malaysia. Simultaneously, it is also aiming to examine and gauge the XBRL adoption readiness by Public Listed Companies' per the voluntary adoption by Suruhanjaya Syarikat Malaysia in 2018 and upcoming mandate by policy makers and government agencies. The factors influencing the perceived timeline to adopt XBRL amongst Public Listed Companies were found to be Management Innovativeness (MI), Management Knowledge (MK), Internet Knowledge (IK) and External Pressure (EP), based on the Summary of Hypotheses in Chapter 4, Section 4.3.9. The results signifies that the internal factors have more influence on the perceived timeline to adopt XBRL which is represented by Management Innovativeness (MI), Management Knowledge (MK) and Internet Knowledge (IK) as compared to the external factors, where only the External Pressure was found to support the hypotheses which was developed.

The study indicated that companies with management who have a higher level of innovativeness and possess a positive point of view towards IT adoption are more likely to provide a better expression towards XBRL adoption readiness. Senior level management who are more innovative and has a higher level of acceptance towards technology adoption would result in an increased acceptance and adoption of XBRL. This observation result is embodied around the discovery of other researches who

endorse the major role of management innovative mindset and IT attitude on technology adoption (Jantan et al., 2001; Lin, 2003; Al- Qirim, 2005).

The findings of the study demonstrated that Management Knowledge on XBRL will increase the adoption readiness and lead to a quicker XBRL adoption. When the senior management are more informed on the benefits of XBRL and gains a level of understanding of how XBRL will be able to facilitate the running of their businesses, they will be more open towards XBRL adoption and pose a higher level of readiness towards XBRL usage. The management of PLCs will need to be conscious of the advantages that XBRL would offer besides enhancing the image of the company such as an increase in corporate governance and able to build a stronger business connection with partners and clients which would lead to developing new business opportunities globally.

Thong and Yap (1995) posited a sensible commentary which suggests that the senior management contributing a pivotal role in the decision-making process of the company and ideally, the development of either a promising or adverse attitude towards any innovation would occur before a choice to take up a technology is concluded. Therefore, the optimistic view of the senior management towards technology is extremely pivotal towards any innovative decisions in line with technology adoption. Even though most PLCs have a low level of awareness on XBRL, respondents in this study have given a positive response in agreement that XBRL will bring hefty gain to companies.

Numerous studies have shown that cost is one of the major factors that deter the full utilization of technology applications by organizations in Malaysia (Khatibi et al., 2007; Sulaiman, 2000). Adoption readiness tends to be lower when the cost to invest in an online innovation is higher. Therefore, cost is revealed to impact PLCs adoption readiness in a negative way. In this study, cost was found to be a very poor predictor of the perceived timeline to adopt XBRL ($f^2$ = 0.001) and insignificant because if a mandate is made by regulators, there would be a forced adoption regardless of the cost. Therefore, the findings of the study is justifiable.

The discovery of this study which shows an important relationship among Internet knowledge and perceived timeline to adopt XBRL is in line with the discovery from the study carried out by Hussein et al. (2007), which reported that the successful implementation of information systems in Malaysia was positively and directly impacted by Internet knowledge of the employees. Thus, as the understanding of technology increases, there would be lesser uncertainties about any technology adoption. XBRL adoption readiness will increase with a dependency on the IT knowledge of the organization, thus, reducing the perceived timeline to adopt XBRL.

Although Compatibility (CM) is found to have an almost medium effect, with $f^2$ value of 0.124, the results demonstrated that compatibility have a negative influence on the perceived timeline to adopt XBRL which rejects the initial Hypotheses which was put forward. In this study, compatibility refers to how compatible XBRL is in line with the values of the company, its values and business needs and further goes to say that if a technology is more compatible with a company, there would be less resistance

because there would be a need to adopt and use the technology for the good of the company. However, the findings this study of having compatibility with a negative impact can be justified by the fact that for listed companies, the main purpose for XBRL adoption would be to comply with the government regulators and not because the adoption of XBRL forms part of the strategic technology roadmaps of Public Listed Companies.

Contrary to the study carried out by Brand and Huizingh (2008), which demonstrated that relative advantage has an important consequence on technology adoption, the findings in this study found that Relative Advantage has an insignificant impact on the perceived timeline to adopt XBRL amongst PLCs in Malaysia. Similar to the justification on compatibility, the main purpose for XBRL adoption amongst Public Listed Companies would be to comply with the government regulators regardless if XBRL is perceived as a technology which would enhance the corporate image or bring in more business opportunities.

External pressure was found to have a positive impact on the perceived timeline to adopt XBRL although XBRL has yet to be mandated in Malaysia, as the respondents are aware that the adoption of XBRL is unavoidable when the mandate is released by the government related authorities. Government regulation and competition in the industry has demonstrated to be an important element that provided a positive push towards technology adoption based on the review of literature published on technology adoption globally as suggested by Iacovou et al. (1995).

Although External Support was found to have an almost medium effect, with f2 value of 0.133, the results demonstrated that External Support have a negative influence on the perceived timeline to adopt XBRL which rejects the initial Hypotheses which was put forward. The main reason for this occurrence is due to there being no indication of the type of support which would be provided by government authorities and regulators to increase the level of XBRL adoption amongst PLCs during the time of this study was conducted. The finding of Chong (2004) is in line with the results of this study where external support especially from government is negatively related to technology adoption because companies will be forced to adopt despite there being no support, if a mandate is made. Hence, XBRL tends to be driven by individual initiatives rather by institutionalized support resulting in PLCs achieving a higher state of adoption based on their own efforts and be more independent as adoption will be based on their individual business requirements.



## 5.4 Contribution of the Study

XBRL is a new reporting technology which constitutes the basis for global integrated reporting. It is redesigning the global financial reporting landscape and will do the same in Malaysia once fully implemented local regulators and adopted by local businesses. There are very limited studies specific to XBLR globally as well as in Malaysia. It is deliberated as a new area and there are still enormous areas for further research (Alles & Debreceny, 2012; Alles & Piechocki, 2012). Some of the areas which have yet to be researched include XBRL reduces operating costs, the level of XBRL adoption in developing countries, XBRL assists in improves the performance of a particular industry via integrated reporting.

There are limited studies on awareness, the intention for re-use of data and expectation of perceived benefit, diffusion of XBLR innovation model and intention to adopt XBLR-based digital reporting in Malaysia. There are however no studies on the factors that would influence the perceived timeline to adopt XBLR amongst Public Listed Companies' in Malaysia.

As XBRL is a new reporting technology which constitutes the basis for global integrated reporting, this study gives a deeper understanding of the antecedent factors that influence XBRL adoption readiness amongst PLC's in Malaysia and examines the relationship amongst the variables. The significance of this research is to explore the intention and readiness of Public Listed Companies in Malaysia in line with SSM's intent to promote the voluntary adoption of XBRL adoption in 2018 for Public Listed Companies' and Security Commission's forthcoming mandate.



This study has provided evidences that the Management Innovativeness (MI), Management Knowledge (MK), Internet Knowledge (IK) and External Pressure (EP) are pertinent factors which influence the perceived timeline to XBRL and adoption readiness amongst the Public Listed Companies in Malaysia. The topic of this current study falls within the category of technology adoption and financial reporting as it covers both dimensions.

### 5.4.1 Theoretical Contribution

This research is significant in explaining technology adoption in Malaysia. The four lines of inquiry represented in this study, i.e. the influence of management characteristics, organization characteristics, technological characteristics and environmental characteristics from DOI, TOE framework and Iacovou model have been used to test the perceived timeline to adopt XBRL amongst Public Listed Companies in Malaysia. A similar study in XBRL context has not been carried out in Malaysia and also globally. The literature from previous studies have been scrutinized and the gaps have been addressed within this research in regards to there being no studies conducted to analyze the factors influencing the XBRL adoption readiness amongst Public Listed Companies in Malaysia.

The findings of this study would provide an indication of the internal and external factors that would influence XBRL adoption readiness amongst potential adopters. It will also provide XBRL International, the global not for profit consortium who propagates XBRL some indication on the gaps that are prevalent in an emerging economy such as Malaysia where the XBLR jurisdiction and footprint are just being established.

The current research model can be used as a guideline for future studies, especially in Malaysia or other Asian settings to ascertain the factors influencing XBRL adoption readiness and determinants of XBRL adoption amongst potential adopters. As a

means to verify the influence of culture, researchers could replicate this study from the context of any country worldwide and compare the results.

### 5.4.2 Managerial Contribution

This study will help Public Listed Companies as they work on their initiatives for the upcoming mandates on the adoption of XBRL and trends. The findings in this study will also help the management of Public Listed Companies to prepare themselves for the successful implementation of XBRL in their organizations and improve on areas they lack before the mandate on XBRL is passed. Based on the findings of the study, senior management of PLC's are encouraged to provide more emphasis on management innovativeness, management knowledge, internet knowledge and external pressure, as they are stronger predictors to influence the perceived timeline to adopt XBRL amongst Public Listed Companies.



Per the discussion above which showed that about 50% of the population consisting of managers indicating a high resistance to change to say that they would prefer to not adopt XBRL if they could seem to be a very alarming finding. Therefore, the management in Public Listed Companies need to acknowledge XBRL as a new reporting technology and bring their awareness of XBRL to the next level. They need to recognize that their acceptance towards technology adoption such as XBRL and level of innovativeness will promote the success and increase the usage of technology as an enabler to drive their businesses. Addressing this issue in regards to technology

adoption is crucial especially in Malaysia, as it is actively being promoted as a knowledge based country in an attempt to differentiate itself from other developing countries.

XBRL constitutes a new technology and a basis for global integrated reporting which is redesigning the global financial reporting landscape and is an emerging business enabler. To increase in knowledge and acquire a favorable perception of online technologies such as XBRL, management should increase their participation in public events, seminars, conferences and workshops on XBRL. With a better understanding, there will be greater levels of confidence to increase the XBRL adoption readiness.

### 5.4.3 Contribution to Policy Makers

This study will provide potential insights that may be useful to the regulators that are looking to mandate XBRL as a method of reporting as it will help gauge the actual readiness and impact the timing of the mandate. The discussions and findings obtained from this study will permit policy makers such as SSM to put in a more concerted effort in trying to promote the awareness and enhance the XBRL adoption readiness especially amongst the top leadership and managers in Public Listed Companies (PLC's) to achieve Suruhanjaya Syarikat Malaysia's Strategic Direction Plan II.

Discussions with the management of companies revealed that Public Listed Companies typically prefer to use hosted applications by service providers as a result

of having scarce resources such as internal IT subject matter experts and those who are knowledgeable in XBRL. Hence, Policy makers should partner with solution providers to provide free software and tools to increase the XBRL readiness amongst PLCs.

Policy makers and government agencies in Malaysia can collaborate with XBRL solution providers to develop suitable measures to develop and tailor-make seminars and workshops to highlight and generate consciousness of XBRL usefulness among the leaders and management of Public Listed Companies to increase the awareness and XBRL adoption readiness.

In regards to the use of XBRL as a strategic business and financial reporting medium, there is a need to increase the measures to incorporate more effective training and education. Relevant seminars to unveil varied perspectives and advantages of XBRL adoption to increase management innovativeness and acceptance, availability of necessary resources driven by government policies, measures and regulation toward technology adoption such as XBRL is very much needed as SSM is due to mandate it at the end of 2017.

Policy makers such as SSM should increase advertisements and announcements online to increase the awareness amongst PLCs and keep them informed of the upcoming mandate and change in reporting requirements. Efforts need to be taken to draw the management and executives of PLCs closer to the relative advantage

obtainable from web-based technologies to encourage a favorable IT adoption attitude.

Policy makers should consider providing incentives and avenues for fund distributions according to PLCs online activity involvement and performance, which will result in the effective increase in XBRL adoption readiness. Policy makers such as SSM should look into collaborating and forming consortiums with LHDN to provide tax subsidies as one of the potential mechanisms to PLCs to adopt XBRL on a voluntary basis and directly increase the readiness of XBRL adoption amongst PLCs.

Government interventions were found to be a powerful stimulant of the usage of e-services by way of grants, government provision, monetary inducements and training (Scupola, 2003). Intervention from government include subsidies, financial incentives, free or low-cost training and support to prepare, encourage acceptance and adoption amongst Public Listed Companies.



The level of successful innovation adopters and likelihood of companies continuing the usage of online technologies will increase with effective external support. On the other hand, government interventions and support from non-competitive industry players may also drive adoption. In Singapore, external support was found to be a pivotal instrument in driving the successful implementation of information systems as posited by Thong (2001).

However, based on this study, External Support indicated to have a weak correlation towards XBRL Adoption Readiness (XA_A) as compared to other variables because XBRL has yet to be mandated in Malaysia and there has also been no clarity as to when the mandate would be made, therefore there are not much external support given to Public Listed Companies to promote voluntary adoption of XBRL or increase the XBRL adoption readiness to date.

### 5.4.4 Contribution to the Accounting Fraternity

As in previous study conducted by Doolin and Troshani (2007), the issue identified at the outset was the relative youth of this new technology. The researchers were therefore aware that a low response rate might be achieved, as was experienced by Pinsker (2003). Owing to the significant contribution that XBRL could make to CAs, it was decided to continue with the research in spite of this possibility.



Troshani and Rao (2007) discovered that setbacks faced by XBRL adopters are generally issues such as lack of a local adoption strategy and absence of widespread awareness of XBRL benefits to motivate adoption. They added that training is very much required for XBRL implementation as it poses significant impact and could raise the rate of adoption. Bartley, Al Chen and Taylor (2010), in their experimental study on the XBRL adoption in the USA, suggests that training is a key obstacle which is capable to obstruct the adoption of XBRL. Therefore, if there is absence of awareness and training not available, XBRL adoption will be slow.

With that, professional bodies such as Malaysian Institute of Accountants (MIA), Malaysian Institute of Certified Public Accountants (MICPA), Association of Chartered Certified Accountants (UK) and other professional accounting bodies should join hands to provide training and create the XBRL awareness amongst their members as most of them form the leaders, management and executives in most of the Public Listed Companies due to all the prevalent indications that XBRL is a new reporting technology which constitutes the basis for global integrated reporting which is currently redesigning the global financial reporting landscape globally.

## 5.5 Limitations

There is an inadequate appreciation and a low level of acceptance towards XBRL in Malaysia as it is predominantly a new technology. Therefore, the probability of having a non-response bias in association with participants who were not aware of XBRL and potentially not be responsive in the survey was foreseen at the beginning of the study. This premise was further demonstrated by the evidence that a noticeable number of people whom the link was sent to undertake the online survey, did not access or view it as only 284 out of the 548 people opened and responded to it. Thus, it is worth considering that 47% is the outcome from the total respondents who accessed the link and acknowledge to the survey.

Granting, this research adds to the identification of some major predictors for XBRL adoption readiness amongst Public Listed Companies in Malaysia, there are some limitations. While the present study does provide several good implications and insights, the contributions of this study, interpretation of the results obtained and the

conclusions drawn accordingly should be measured in light of the limitations of the study. The main limitations of this study can be addressed through three main categorizations namely, generalizability, causality and methodology. These three categories are further discussed below.

### 5.5.1 Generalizability

The results of this study and the subsequent conclusions drawn were totally based on the clean data of 256 respondents who were the senior executives and managers from the Finance and IT Departments of the Public Listed Companies in Malaysia who participated in this study. Most actual respondents were the managers which formed almost 50% of the respondents. Although, there are arguments that the reliance on the perception of one key informant might imply some cognitive biases, studies have shown that managers are the most influential people affecting innovation and change in organizations. Therefore, the expert opinion, pretest and pilot study was conducted to ensure no cognitive biases were present during the study.

Our results were based on data at one-point of time across a cross-section of managers of Public Listed Companies, which therefore did not consider the time-series effect of continuous long-term exposure to the upcoming mandate and the impact this would have on their XBRL adoption readiness. The findings may change as reporting in XBRL is mandated and managers from PLC's are more familiar and grows more experienced in the use of XBRL. Therefore, we believe that our results and conclusion may have been different had the design of our research been longitudinal

rather than cross-sectional. Nevertheless, this study was able to cover the key industry groups of Public Listed Companies in Malaysia. Hence, a generalized conclusion may be possible, to sum up the factors influencing the perceived timeline to adopt XBRL amongst Public Listed Companies in Malaysia.

### 5.5.2 Causality

The findings from this study revealed the significant causality of the environmental characteristic, namely External Support (ES) on the perceived timeline to adopt XBRL, where the results showed a negative relationship. Thus, not supported. This may have been caused by the fact that the respondents of this study have not been made aware of the kind of support available from the government, government agencies and also technology solution providers to support the technology acceptance and adoption.



The impact is further weighted by the fact that there has yet to be any voluntary XBRL adoption amongst PLCs in Malaysia during the data collection period in 2016. It is our belief that these results could have been different if the announcement on the mandate to adopt XBRL would be made by Suruhanjaya Securities Malaysia (SSM) for Public Listed Companies (PLC) to submit their financial reports in XBRL format prior to the execution of the study. Therefore, we strongly advise employing longitudinal studies to more accurately examine the actual factors influencing the perceived timeline to adopt XBRL amongst Public Listed Companies in Malaysia as

the announcement to have a voluntary adoption in 2018 has been announced only in January 2018.

### 5.5.3 Methodology

Based on the methodology used in this study, as with most quantitative research design using primary survey-based data, we were able to identify certain limitations that were inherent in this study that employed primary data based on a survey in the form of a questionnaire.

Firstly, the questionnaire utilized in this study consists of statements on a four-point Likert scale, in which the respondents measure their degree of agreement towards statements related to Management Characteristics, Organisation Characteristics, Technological Characteristics and Environmental Characteristics towards the perceived timeline to adopt XBRL amongst Public Listed Companies in Malaysia. The Management and Organization Characteristics concept was sub-divided into two constructs each, each containing several statements measuring different aspects of Management and Organisation Characteristics.

Both the Technological and Environmental Characteristics concept was sub-divided into two constructs, each containing several statements measuring different aspects of Technological and Environmental Characteristics respectively. Macinati (2008) purported that as the respondents' degree of agreement towards these Likert-scale statements were perception-based, the responses gathered from the respondents would

have been impacted by their partial perception of the situation at the point in time when the survey was conducted for this research.

Due to the defensive attitude of most Asians and the privacy involved, respondents might have been hesitant to share accurate information and responses. To further strengthen future studies of this nature, it is recommended that the mixed-mode research design, comprising both quantitative as well as qualitative design to provide checks and balances to any perception-biases that may occur. Also, Likert scales can be replaced with rubrics that can capture more precisely the perception of the respondents.

The other limitation that may occur with the use of the Likert-scale survey questionnaire is the possibility of having respondents that may provide arbitrary responses without understanding or paying careful attention to the statements in the survey questionnaire because it may be time-consuming. It is therefore important that ample time and a comprehensive explanation of the survey questionnaire be provided to the respondents to further improve the quality of the data received. This limitation could also be addressed if this type of study is carried out using the mixed-mode research design, as the quantitative data can be further validated with the qualitative data of the respondents.

Finally, there was also the limitation of the lack of XBRL awareness due to there being minimal XBRL related training and research being carried out in developing countries, especially with regards to Malaysia. Therefore, this limits our ability to

make the much-needed comparisons of findings with other sources. To the author's knowledge, no study has been conducted on the factors influencing XBRL adoption readiness amongst Public Listed Companies in Malaysia to date.

## 5.6 Suggestion for future research

The findings of this study demonstrate the influence of internal factors which comprise of management and organization characteristics and external factors comprising of technological and environmental characteristics on the perceived timeline to adopt XBRL amongst PLCs in Malaysia.

Thus, future research can build on the significant factors in this research by introducing new factors such as cultural characteristics, the performance of companies, quality of information provided to Government and other measures to provide new insights on factors influencing XBLR adoption readiness and its determinants.



Future research should look into extending the model to include other, untested factors from the four main technology adoption characteristics (management, organizational, technological and environmental characteristics). A study with a potential moderator should be carried out to further understand the factors which would determine a technology adoption in a similar cultural context.

The findings obtained in this study should also be tested if these are specific only to Malaysian companies or whether the same outcomes will be achieved across the other

South East Asian countries as well with regards to adoption in the future. Thus, it would call for a cross-cultural approach in understanding the factors that would influence the adoption readiness of XBRL.

## 5.7 Conclusion

XBRL is a significant new technology for standardized electronic exchange of business and financial data (Hoffman, 2006) and as such is relevant to Public Listed Companies for the dissemination of information to all the relevant stakeholders. The foundation of this study is to identify the internal and external factors that influence the perceived timeline and readiness to adopt XBRL amongst Public Listed Companies' in Malaysia and use XBRL per the upcoming mandate.

The results of the study signifies that internal factors such as management and organisation characteristics along with and external environmental factor such as External Pressure has a significant influence on the perceived timeline to adopt XBRL. Organisation which has Management Characteristics namely higher Management Innovativeness (MI) and Management Knowledge (MK) characteristics are more likely to have a positive influence on the perceived timeline to adopt XBRL. Organisation which has higher Internet Knowledge (IK) has a positive influence on the perceived timeline to adopt XBRL. However, the results showed that the other Organisation characteristic which was tested during this study, which is Cost (CO), does not have a direct effect on the perceived timeline to adopt XBRL (PTAX). External technological characteristics such as Comparability (CM) and Relative Advantage (RA) does not have a direct effect on the perceived timeline to adopt

XBRL (PTAX). The results showed that there is a positive relationship between External Pressure (EP) which is an external environmental characteristic and perceived timeline to adopt XBRL, while External Support (ES) which is the other External Environmental variable does not have a direct effect on the perceived timeline to adopt XBRL (PTAX).

The study also demonstrated that there is a high resistance to technology adoption such as XBRL amongst the management of the Public Listed Companies in Malaysia. The Top Management and Managers of the companies indicated that they were not ready to adopt XBRL now and would be ready to adopt within a year. In addition to that, the top management and managers also indicated that they would like to further delay the time to adopt XBRL after one year or later (if they could) while the executives on the other hand seem to be more inclined to technology adoption. This is an alarming indication of the state of technology acceptance amongst Public Listed Companies as the managers form the main executor group within an organisation who are responsible to drive and roll out any new changes within the companies and the ones who interact with the ground level employees.

Firstly, the results of this study will edify the current body of knowledge regarding the internal and external determinant factors for a successful XBRL adoption. Given the low awareness and drive towards the adoption of XBRL in Malaysia, this study would serve as a catalyst in driving future efforts to increase the uptake of XBRL in Malaysia with the understanding of the determining factors for a successful adoption.

Secondly, being a new technology in Malaysia, there is limited academic research literature and studies performed on XBRL in Malaysia. Hence, there will be a growing demand for this in the coming years.

Lastly, this study will enable sufficient measures to be taken by government authorities to provide external support to increase the readiness for XBRL Adoption amongst Public Listed Companies in Malaysia and reduce the resistance from the management level in order to drive early adoption during the voluntary adoption phase in 2018. Considering the many stated benefits of XBRL, it appears that the implementation of this new technology is prevented by resistance to change and that the solution to drive XBRL adoption would possibly be enforcement through legislation.

The findings in this study will also help the management of Public Listed Companies to prepare themselves for the successful implementation of XBRL in their organizations and improve on areas they lack before the mandate on XBRL is passed. Francis (2012) advocates that among the key readiness points for preparers and users of business and financial information is to get involved, study the rudiments of XBRL early and its influence, clasp technology as a mediator of change and recognize the connections between technology and accounting. Early preparation will permit sufficient time for the unavoidable learning curve and unexpected execution concerns before the compulsory reporting in XBRL format is enforced by the government agencies (Francis, 2012). A suitable execution team will need to be engaged across the organization right from the very start to improve the XBRL implementation

experience (Francis, 2013). Although the results and inferences of this study are specific to the context of Public Listed in Malaysia, the learnings from this study can also be inferred to other countries with similar economic and cultural situations.

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## APPENDICES

**Appendix 1 – Questionnaire**

# UNIVERSITI UTARA MALAYSIA

**A Study on factors influencing the perceived timeline to Adopt XBRL Amongst PLC's in Malaysia.**

***HIGHLY CONFIDENTIAL***

Dear Sir/Madam,
First and foremost, thank you very much for taking part in this survey. The objective of this survey is to perform a preliminary study on the determinants of XBRL adoption readiness amongst Pubic Listed Companies (PLCs) in Malaysia. It's purely an academic study that is undertaken to fulfill the partial requirement of the Doctorate in Business Administration program of Universiti Utara Malaysia.

Ideally, this questionnaire should be filled up by the CEO, managing director, managers or executives who has an influence on the decision making on technology adoption matters. If you are not in such a position, I would appreciate if you could refer it to the rightful person.



Appreciate if you could please complete the questionnaire based on your honest opinion. All the information provided by you will be kept anonymous and strictly confidential, and will only be used for the purpose of this academic research.

Your participation is highly appreciated in making this study successful. Should you have any queries, please feel free to drop me an email at patfran2013@gmail.com or reach me on my mobile at 012 – 4858174.

Thank you very much for your valuable time and assistance in completing this questionnaire.

Sincerely

Patricia Francis
Matric No. 95595,
Doctorate in Business Administration Student,
Universiti Utara Malaysia.

## SECTION A: GENERAL INFORMATION

Please fill in the blanks with the relevant general information. Please tick (√) the box and fill the necessary information for the option which best describes your company and yourself.

| RESPONDENT'S PROFILE | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | **Job Level:** | | | | | | |
| | | Chief Executive Officer | | | Managing Director | | |
| | | Senior Manager/ Manager | | | Senior Executive | | |
| | | Others: | | | | | |
| 2 | **Department/ Division:** | | | | | | |
| 3 | **Working Experience:** | | | | | | |
| | Current organization (Years): | | | Overall working experience (Years): | | | |
| 4 | **Age (Years):** | | Below 35 | | Between 36-55 | | Above 55 |
| 5 | **Race:** | | | | | | |
| | | Muslim | | | Chinese | | |
| | | Indian | | | Others: | | |
| 6 | **Education Level:** | | | | | | |
| | | Secondary | | | Diploma | | |
| | | Graduate | | | Post Graduate | | |
| | | DBA/ Ph. D | | | Others: | | |

| COMPANY'S PROFILE | | | | | |
|---|---|---|---|---|---|
| 7 | **Company Name:** | | | | |
| 8 | **Number of Employees:** | | | | |
| 9 | **Year of Incorporation:** | | | | |
| 10 | **Year of Listing:** | | | | |
| 11 | **Type of Listing (Main/Ace):** | | | | |
| 12 | **Industry/ Sector:** | | | | |
| | | Construction | | Plantations | |
| | | Consumer Products | | Properties | |
| | | Finance | | REITS | |
| | | Hotels | | Technology | |
| | | Industrial Products | | Trading/ Services | |
| | | Infrastructure | | Others: | |

## SECTION B: FACTORS INFLUENCING XBRL ADOPTION TIMELINE

This section will emphasize on the factors that will influence the XBRL adoption readiness in your company. Please circle the appropriate number that best describes your personal opinion regarding the question.

| Opinion | Strongly Disagree | Disagree | Agree | Strongly Agree |
|---|---|---|---|---|
| Number | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| **Part 1. Management Characteristics** | | | | | |
| **(1) Management Innovativeness** | | | | | |
| 13 | I have/ Management has original ideas | 1 | 2 | 3 | 4 |
| 14 | I have/ Management is stimulating | 1 | 2 | 3 | 4 |
| 15 | I have/ Management copes with several new ideas at the same time | 1 | 2 | 3 | 4 |
| 16 | I have/ Management has fresh perspective on old problems | 1 | 2 | 3 | 4 |
| 17 | I have/ Management would create something new rather than improve something | 1 | 2 | 3 | 4 |
| 18 | I have/ Management often risk doing things differently | 1 | 2 | 3 | 4 |
| **(2) Management Knowledge** | | | | | |
| 19 | I would rate my own/ Management understanding of technologies as very good compared to other people in similar positions | 1 | 2 | 3 | 4 |
| 20 | I have/ Management have formal qualifications in XBRL (attended workshop or training on XBRL) | 1 | 2 | 3 | 4 |
| 21 | XBRL increases the productivity of employees | 1 | 2 | 3 | 4 |
| 22 | My employees find XBRL easy to use for reporting and decision-making | 1 | 2 | 3 | 4 |
| 23 | I have/ Management has seen what other global Public Listed Companies have achieved with XBRL | 1 | 2 | 3 | 4 |
| 24 | XBRL makes financial information easier to analyse | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| **Part 2. Organization Characteristics** | | | | | |
| **(3) Cost** | | | | | |
| 25 | The cost of adopting XBRL is far greater than the benefits | 1 | 2 | 3 | 4 |
| 26 | The cost of maintenance and support of XBRL are very high for our company | 1 | 2 | 3 | 4 |
| 27 | The amount of money and time invested in training employees in XBRL is very high | 1 | 2 | 3 | 4 |
| **(4) Internet Knowledge/ competence** | | | | | |
| 28 | Most employees are computer-literate and internet savvy | 1 | 2 | 3 | 4 |
| 29 | There is at least one employee who is a computer expert | 1 | 2 | 3 | 4 |
| 30 | I would rate my/ the employees' understanding of internet and technology as very good compared with other companies in the same industry | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| **Part 3. Technological Characteristics** | | | | | |
| **(5) Compatibility** | | | | | |
| 31 | The adoption of XBRL is consistent with the values, beliefs and business needs of our company | 1 | 2 | 3 | 4 |
| 32 | There is sufficient support for the adoption of XBRL from our top management | 1 | 2 | 3 | 4 |
| 33 | There is no or only minimal resistance to change from our staff | 1 | 2 | 3 | 4 |
| **(6) Relative Advantage** | | | | | |
| 34 | Our company is satisfied with the use of internet and technology in the business | 1 | 2 | 3 | 4 |
| 35 | Technology adoption has enhanced the corporate image of our company | 1 | 2 | 3 | 4 |
| 36 | Internet and technology adoption has helped establish stronger links with our clients or other Organizations | 1 | 2 | 3 | 4 |
| 37 | Internet and technology adoption has helped our company develop new business opportunities | 1 | 2 | 3 | 4 |
| 38 | Internet and technology adoption has helped reduce the costs of information marketing and advertising, customer service and support, information gathering and telecommuting | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| **Part 4. Environmental Characteristics** | | | | | |
| **(7) External Pressure** | | | | | |
| 39 | Competition is a factor in our decision to adopt XBRL | 1 | 2 | 3 | 4 |
| 40 | Social factors are important in our decision to adopt XBRL | 1 | 2 | 3 | 4 |
| 41 | My company depend on other firms that are already using XBRL | 1 | 2 | 3 | 4 |
| 42 | Our industry is pressuring us to adopt XBRL | 1 | 2 | 3 | 4 |
| 43 | Our organization is pressured by government to adopt XBRL | 1 | 2 | 3 | 4 |
| **(8) External Support** | | | | | |
| 44 | Regulators and government agencies provide incentives for XBRL adoption | 1 | 2 | 3 | 4 |
| 45 | There are business partners who provide training on XBRL | 1 | 2 | 3 | 4 |
| 46 | Technology vendors actively market XBRL by providing incentives and subsidies for adoption | 1 | 2 | 3 | 4 |
| 47 | Technology vendors promote XBRL by offering free awareness workshops, training sessions and technical support for effective XBRL adoption | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| **Part 5. Perceived Timeline to Adopt XBRL** | | | | | |
| 48 | My company intends to adopt XBRL right now | 1 | 2 | 3 | 4 |
| 49 | My company will be ready to adopt XBRL in a year's time | 1 | 2 | 3 | 4 |
| 50 | If my company could, my company would like to further delay the time to adopt XBRL after one year or later | 1 | 2 | 3 | 4 |

**--- End of Questionnaire ----**

Thank you for your time.

Would you like to have a copy of the results of the survey mailed to your company?

| | | | |
|---|---|---|---|
| | Yes | | No, thank you |

**Appendix 2 – Table for Determining Sample Size for a Finite Population created by Krejcie and Morgan (1970)**

Table 3.1

*Table for Determining Sample Size of a Known Population*

| N | S | N | S | N | S | N | S | N | S |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 100 | 80 | 280 | 162 | 800 | 260 | 2800 | 338 |
| 15 | 14 | 110 | 86 | 290 | 165 | 850 | 265 | 3000 | 341 |
| 20 | 19 | 120 | 92 | 300 | 169 | 900 | 269 | 3500 | 346 |
| 25 | 24 | 130 | 97 | 320 | 175 | 950 | 274 | 4000 | 351 |
| 30 | 28 | 140 | 103 | 340 | 181 | 1000 | 278 | 4500 | 354 |
| 35 | 32 | 150 | 108 | 360 | 186 | 1100 | 285 | 5000 | 357 |
| 40 | 36 | 160 | 113 | 380 | 191 | 1200 | 291 | 6000 | 361 |
| 45 | 40 | 170 | 118 | 400 | 196 | 1300 | 297 | 7000 | 364 |
| 50 | 44 | 180 | 123 | 420 | 201 | 1400 | 302 | 8000 | 367 |
| 55 | 48 | 190 | 127 | 440 | 205 | 1500 | 306 | 9000 | 368 |
| 60 | 52 | 200 | 132 | 460 | 210 | 1600 | 310 | 10000 | 370 |
| 65 | 56 | 210 | 136 | 480 | 214 | 1700 | 313 | 15000 | 375 |
| 70 | 59 | 220 | 140 | 500 | 217 | 1800 | 317 | 20000 | 377 |
| 75 | 63 | 230 | 144 | 550 | 226 | 1900 | 320 | 30000 | 379 |
| 80 | 66 | 240 | 148 | 600 | 234 | 2000 | 322 | 40000 | 380 |
| 85 | 70 | 250 | 152 | 650 | 242 | 2200 | 327 | 50000 | 381 |
| 90 | 73 | 260 | 155 | 700 | 248 | 2400 | 331 | 75000 | 382 |
| 95 | 76 | 270 | 159 | 750 | 254 | 2600 | 335 | 1000000 | 384 |

*Note: N is Population Size; S is Sample Size* *Source: Krejcie & Morgan, 1970*



**Appendix 3 – Missing Data Analysis**

| | N | Missing Count |
|---|---|---|
| JoLe | 256 | 0 |
| CuEx | 256 | 0 |
| OvEx | 256 | 0 |
| Age | 256 | 0 |
| Ra | 256 | 0 |
| EdLe | 256 | 0 |
| Ind | 256 | 0 |
| MI1 | 256 | 0 |
| MI2 | 256 | 0 |
| MI3 | 256 | 0 |
| MI4 | 256 | 0 |

Appendix 3 (continued)

| | | |
|---|---|---|
| MI5 | 256 | 0 |
| MI6 | 256 | 0 |
| XA1 | 256 | 0 |
| XA2 | 256 | 0 |
| XA3 | 256 | 0 |
| XA4 | 256 | 0 |
| XA5 | 256 | 0 |
| XA6 | 256 | 0 |
| ReOR1 | 256 | 0 |
| OR2 | 256 | 0 |
| OR3 | 256 | 0 |
| IK1 | 256 | 0 |
| IK2 | 256 | 0 |
| IK3 | 256 | 0 |
| PEOU1 | 256 | 0 |
| PEOU2 | 256 | 0 |
| PEOU3 | 256 | 0 |
| RA1 | 256 | 0 |
| RA2 | 256 | 0 |
| RA3 | 256 | 0 |
| RA4 | 256 | 0 |
| RA5 | 256 | 0 |
| RePC1 | 256 | 0 |
| RePC2 | 256 | 0 |
| RePC3 | 256 | 0 |
| CP1 | 256 | 0 |
| CP2 | 256 | 0 |
| CP3 | 256 | 0 |
| TPP1 | 256 | 0 |
| TPP2 | 256 | 0 |
| GR1 | 256 | 0 |
| GR2 | 256 | 0 |
| ES1 | 256 | 0 |
| ES2 | 256 | 0 |
| ES3 | 256 | 0 |
| ES4 | 256 | 0 |
| XA1_A | 256 | 0 |
| XA2_A | 256 | 0 |
| ReXA3_A | 256 | 0 |

## Appendix 4 – Dimension Reduction Reports
## Appendix 4.1 – Descriptive Statistics

**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| MIFull | 256 | 1.83 | 3.83 | 2.7826 | .43137 |
| MK | 256 | 1.00 | 3.83 | 2.8073 | .60641 |
| COFull | 256 | 1.67 | 4.00 | 3.1276 | .56418 |
| IKFull | 256 | 1.33 | 4.00 | 2.7656 | .51447 |
| CMFull | 256 | 1.33 | 4.00 | 2.7695 | .40077 |
| RAFull | 256 | 1.40 | 3.40 | 2.2383 | .42503 |
| EPFull | 256 | 1.40 | 3.60 | 2.4172 | .46122 |
| ESFull | 256 | 1.25 | 3.25 | 2.5166 | .42642 |
| PTXA | 256 | 1.33 | 3.33 | 2.4271 | .54981 |
| Valid N (listwise) | 256 | | | | |

**Descriptive Statistics**

| | Mean | Std. Deviation | Analysis N |
|---|---|---|---|
| MI1 | 2.89 | .668 | 256 |
| MI2 | 2.46 | .940 | 256 |
| MI3 | 2.31 | .737 | 256 |
| MI4 | 3.00 | .861 | 256 |
| MI5 | 3.17 | .898 | 256 |
| MI6 | 2.88 | .690 | 256 |
| MK1 | 2.78 | .650 | 256 |
| MK2 | 2.77 | .637 | 256 |
| MK3 | 2.68 | .825 | 256 |
| MK4 | 2.88 | .704 | 256 |
| MK5 | 2.88 | .555 | 256 |
| MK6 | 2.84 | .644 | 256 |
| CO1 | 3.13 | .862 | 256 |
| CO2 | 2.91 | .861 | 256 |
| CO3 | 3.34 | .655 | 256 |
| IK1 | 2.43 | .694 | 256 |
| IK2 | 2.96 | .804 | 256 |
| IK3 | 2.90 | .815 | 256 |
| CM1 | 2.76 | .609 | 256 |
| CM2 | 2.89 | .512 | 256 |
| CM3 | 2.66 | .674 | 256 |
| RA1 | 2.34 | .667 | 256 |
| RA2 | 2.17 | .573 | 256 |
| RA3 | 2.22 | .994 | 256 |
| RA4 | 1.80 | .778 | 256 |

## Appendix 4.1 – Descriptive Statistics (cont'd.)

| | | | |
|---|---|---|---|
| RA5 | 2.66 | .734 | 256 |
| EP1 | 2.64 | .760 | 256 |
| EP2 | 2.34 | .724 | 256 |
| EP3 | 2.57 | .683 | 256 |
| EP4 | 2.33 | .887 | 256 |
| EP5 | 2.21 | .657 | 256 |
| ES1 | 2.27 | .651 | 256 |
| ES2 | 2.51 | .613 | 256 |
| ES3 | 2.64 | .721 | 256 |
| ES4 | 2.64 | .694 | 256 |
| PTAX1 | 2.37 | .724 | 256 |
| PTAX2 | 2.55 | .723 | 256 |
| Re_ PTAX3 | 2.36 | .641 | 256 |

## Appendix 4.2 – KMO and Bartlett's Test

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .854 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 9671.874 |
| | df | 703 |
| | Sig. | .000 |



## Appendix 4.3 – Total Variance Explained (All Variables)

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 3.863 | 42.923 | 42.923 | 3.863 | 42.923 | 42.923 | 3.051 | 33.895 | 33.895 |
| 2 | 1.583 | 17.588 | 60.511 | 1.583 | 17.588 | 60.511 | 2.093 | 23.254 | 57.149 |
| 3 | 1.113 | 12.366 | 72.877 | 1.113 | 12.366 | 72.877 | 1.298 | 14.426 | 71.575 |
| 4 | 1.012 | 11.244 | 84.121 | 1.012 | 11.244 | 84.121 | 1.129 | 12.546 | 84.121 |
| 5 | .436 | 4.849 | 88.97 | | | | | | |
| 6 | .353 | 3.926 | 92.896 | | | | | | |
| 7 | .279 | 3.098 | 95.994 | | | | | | |
| 8 | .241 | 2.676 | 98.671 | | | | | | |
| 9 | .119 | 1.326 | 100 | | | | | | |

Extraction Method: Principal Component Analysis.

## Appendix 4.4 – Factor Loadings (Outer Loadings – PLS3)

| | 1. Mgt Innovativeness (MI) | 2. Mgt Knowledge (MK) | 3. Cost (CO) | 4. Int Knowledge (IK) | 5. Compatibility (CM) | 6. Relative Adv (RA) | 7. Ex Pressure (EP) | 8. Ex Support (ES) | 9. Perceived Timeline to Adopt XBRL (PTAX) |
|---|---|---|---|---|---|---|---|---|---|
| CM1 | | | | | 0.967 | | | | |
| CM3 | | | | | 0.917 | | | | |
| CO1 | | | 0.864 | | | | | | |
| CO2 | | | 0.844 | | | | | | |
| EP1 | | | | | | | 0.746 | | |
| EP2 | | | | | | | 0.778 | | |
| EP4 | | | | | | | 0.642 | | |
| EP5 | | | | | | | 0.852 | | |
| ES2 | | | | | | | | 0.766 | |
| ES3 | | | | | | | | 0.662 | |
| ES4 | | | | | | | | 0.881 | |
| IK2 | | | | 0.983 | | | | | |
| IK3 | | | | 0.978 | | | | | |
| MI4 | 0.942 | | | | | | | | |
| MI5 | 0.831 | | | | | | | | |
| MI6 | 0.937 | | | | | | | | |
| MK1 | | 0.866 | | | | | | | |
| MK2 | | 0.894 | | | | | | | |
| MK3 | | 0.892 | | | | | | | |
| MK4 | | 0.916 | | | | | | | |
| MK5 | | 0.904 | | | | | | | |
| MK6 | | 0.963 | | | | | | | |
| PTAX1 | | | | | | | | | 0.816 |
| PTAX2 | | | | | | | | | 0.787 |
| RA1 | | | | | | 0.697 | | | |
| RA2 | | | | | | 0.937 | | | |
| RA5 | | | | | | 0.710 | | | |
| Re_PTAX3 | | | | | | | | | 0.760 |



## Appendix 5 – Descriptive Statistics Reports

## Appendix 5.1 – Frequency Tables

I. Job Level

**JoLe**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Top Management | 56 | 21.9 | 21.9 | 21.9 |
| | Mid Management | 125 | 48.8 | 48.8 | 70.7 |
| | Executive | 75 | 29.3 | 29.3 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

II. Current Experience

**CuEx**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Below 5 yrs | 187 | 73.0 | 73.0 | 73.0 |
| | Between 5-10 yrs | 58 | 22.7 | 22.7 | 95.7 |
| | Above 10 yrs | 11 | 4.3 | 4.3 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

III. Overall Experience

**OvEx**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Below 10 yrs | 31 | 12.1 | 12.1 | 12.1 |
| | Between 10-20 yrs | 104 | 40.6 | 40.6 | 52.7 |
| | Above 20 yrs | 121 | 47.3 | 47.3 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

IV. Age

**Age**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Below 35 yrs | 33 | 12.9 | 12.9 | 12.9 |
| | Between 36-55 yrs | 220 | 85.9 | 85.9 | 98.8 |
| | Above 55 yrs | 3 | 1.2 | 1.2 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

V. Race

**Ra**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Muslim | 74 | 28.9 | 28.9 | 28.9 |
| | Chinese | 116 | 45.3 | 45.3 | 74.2 |
| | Indian | 52 | 20.3 | 20.3 | 94.5 |
| | Others | 14 | 5.5 | 5.5 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

VI. Education Level

**EdLe**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Diploma | 9 | 3.5 | 3.5 | 3.5 |
| | Graduate | 105 | 41.0 | 41.0 | 44.5 |
| | Post Graduate | 65 | 25.4 | 25.4 | 69.9 |
| | DBA/ PHD | 2 | .8 | .8 | 70.7 |
| | Professional | 75 | 29.3 | 29.3 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

VII. Industry

**Ind**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Manufacturing | 43 | 16.8 | 16.8 | 16.8 |
| | Oil & Gas | 18 | 7.0 | 7.0 | 23.8 |
| | Construction | 8 | 3.1 | 3.1 | 27.0 |
| | Retail | 17 | 6.6 | 6.6 | 33.6 |
| | Service | 170 | 66.4 | 66.4 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

## Appendix 5.2 – Frequencies

**Statistics**

| | | JoLe | CuEx | OvEx | Age | Ra | EdLe | Ind |
|---|---|---|---|---|---|---|---|---|
| N | Valid | 256 | 256 | 256 | 256 | 256 | 256 | 256 |
| | Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | | 2.07 | 1.31 | 2.35 | 1.88 | 2.02 | 3.11 | 3.99 |
| Std. Error of Mean | | .045 | .034 | .043 | .022 | .053 | .082 | .099 |
| Median | | 2.00 | 1.00 | 2.00 | 2.00 | 2.00 | 3.00 | 5.00 |
| Mode | | 2 | 1 | 3 | 2 | 2 | 2 | 5 |
| Std. Deviation | | .713 | .550 | .687 | .357 | .844 | 1.313 | 1.580 |
| Variance | | .508 | .302 | .472 | .127 | .713 | 1.724 | 2.498 |
| Skewness | | -.109 | 1.572 | -.586 | -1.579 | .507 | .480 | -1.122 |
| Std. Error of Skewness | | .152 | .152 | .152 | .152 | .152 | .152 | .152 |
| Kurtosis | | -1.020 | 1.541 | -.757 | 3.090 | -.335 | -1.291 | -.529 |
| Std. Error of Kurtosis | | .303 | .303 | .303 | .303 | .303 | .303 | .303 |
| Minimum | | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Maximum | | 3 | 3 | 3 | 3 | 4 | 5 | 5 |
| Sum | | 531 | 336 | 602 | 482 | 518 | 797 | 1021 |
| Percentiles | 25 | 2.00 | 1.00 | 2.00 | 2.00 | 1.00 | 2.00 | 3.00 |
| | 50 | 2.00 | 1.00 | 2.00 | 2.00 | 2.00 | 3.00 | 5.00 |
| | 75 | 3.00 | 2.00 | 3.00 | 2.00 | 3.00 | 5.00 | 5.00 |

**JoLe**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Top Management | 56 | 21.9 | 21.9 | 21.9 |
| | Mid Management | 125 | 48.8 | 48.8 | 70.7 |
| | Executive | 75 | 29.3 | 29.3 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

**CuEx**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Below 5 yrs | 187 | 73.0 | 73.0 | 73.0 |
| | Between 5-10 yrs | 58 | 22.7 | 22.7 | 95.7 |
| | Above 10 yrs | 11 | 4.3 | 4.3 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

**OvEx**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Below 10 yrs | 31 | 12.1 | 12.1 | 12.1 |
| | Between 10-20 yrs | 104 | 40.6 | 40.6 | 52.7 |
| | Above 20 yrs | 121 | 47.3 | 47.3 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

**Age**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Below 35 yrs | 33 | 12.9 | 12.9 | 12.9 |
| | Between 36-55 yrs | 220 | 85.9 | 85.9 | 98.8 |
| | Above 55 yrs | 3 | 1.2 | 1.2 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |



**Ra**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Muslim | 74 | 28.9 | 28.9 | 28.9 |
| | Chinese | 116 | 45.3 | 45.3 | 74.2 |
| | Indian | 52 | 20.3 | 20.3 | 94.5 |
| | Others | 14 | 5.5 | 5.5 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

**EdLe**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Diploma | 9 | 3.5 | 3.5 | 3.5 |
| | Graduate | 105 | 41.0 | 41.0 | 44.5 |
| | Post Graduate | 65 | 25.4 | 25.4 | 69.9 |
| | DBA/ PHD | 2 | .8 | .8 | 70.7 |
| | Professional | 75 | 29.3 | 29.3 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |

**Ind**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Manufacturing | 43 | 16.8 | 16.8 | 16.8 |
| | Oil & Gas | 18 | 7.0 | 7.0 | 23.8 |
| | Construction | 8 | 3.1 | 3.1 | 27.0 |
| | Retail | 17 | 6.6 | 6.6 | 33.6 |
| | Service | 170 | 66.4 | 66.4 | 100.0 |
| | Total | 256 | 100.0 | 100.0 | |



## Appendix 6 – Construct Reliability and Validity

| | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|---|---|---|---|---|
| 1. Mgt Innovativeness (MI) | 0.893 | 0.962 | 0.931 | 0.819 |
| 2. Mgt Knowledge (MK)_ | 0.956 | 0.964 | 0.965 | 0.821 |
| 3. Cost (CO) | 0.630 | 0.632 | 0.844 | 0.730 |
| 4. Int Knowledge (IK) | 0.960 | 0.970 | 0.980 | 0.961 |
| 5. Compatibility (CM) | 0.879 | 1.005 | 0.941 | 0.888 |
| 6. Relative Adv (RA) | 0.702 | 0.908 | 0.829 | 0.622 |
| 7. Ex Pressure (EP) | 0.760 | 0.789 | 0.843 | 0.575 |
| 8. Ex Support (ES) | 0.685 | 0.801 | 0.817 | 0.601 |
| 9. Perceived Timeline to Adopt XBRL (PTAX) | 0.695 | 0.694 | 0.831 | 0.621 |

## Appendix 7 – Fornell-Larcker Criterion

| | 1. Mgt Innovativeness (MI) | 2. Mgt Knowledge (MK) | 3. Cost (CO) | 4. Int Knowledge (IK) | 5. Compatibility (CM) | 6. Relative Adv (RA) | 7. Ex Pressure (EP) | 8. Ex Support (ES) | 9. Perceived Timeline to Adopt XBRL (PTAX) |
|---|---|---|---|---|---|---|---|---|---|
| 1. Mgt Innovativeness (MI) | 0.905 | | | | | | | | |
| 2. Mgt Knowledge (MK)_ | 0.896 | 0.906 | | | | | | | |
| 3. Cost (CO) | 0.805 | 0.819 | 0.854 | | | | | | |
| 4. Int Knowledge (IK) | 0.602 | 0.609 | 0.707 | 0.980 | | | | | |
| 5. Compatibility (CM) | -0.143 | -0.039 | -0.157 | -0.273 | 0.942 | | | | |
| 6. Relative Adv (RA) | 0.389 | 0.545 | 0.400 | 0.150 | 0.322 | 0.789 | | | |
| 7. Ex Pressure (EP) | 0.453 | 0.618 | 0.431 | 0.219 | 0.100 | 0.739 | 0.758 | | |
| 8. Ex Support (ES) | 0.634 | 0.680 | 0.618 | 0.224 | 0.097 | 0.566 | 0.584 | 0.775 | |
| 9. Perceived Timeline to Adopt XBRL (PTAX) | 0.628 | 0.648 | 0.576 | 0.632 | -0.324 | 0.333 | 0.480 | 0.250 | 0.788 |

## Appendix 8 – Inner VIF Values

| | 1. Mgt Innovativeness (MI) | 2. Mgt Knowledge (MK)_ | 3. Cost (CO) | 4. Int Knowledge (IK) | 5. Compatibility (CM) | 6. Relative Adv (RA) | 7. Ex Pressure (EP) | 8. Ex Support (ES) | 9. Perceived Timeline to Adopt XBRL (PTAX) |
|---|---|---|---|---|---|---|---|---|---|
| 1. Mgt Innovativeness (MI) | | | | | | | | | **6.282** |
| 2. Mgt Knowledge (MK)_ | | | | | | | | | **8.895** |
| 3. Cost (CO) | | | | | | | | | 4.667 |
| 4. Int Knowledge (IK) | | | | | | | | | **2.610** |
| 5. Compatibility (CM) | | | | | | | | | **1.356** |
| 6. Relative Adv (RA) | | | | | | | | | **2.795** |
| 7. Ex Pressure (EP) | | | | | | | | | **2.864** |
| 8. Ex Support (ES) | | | | | | | | | **2.667** |
| 9. Perceived Timeline to Adopt XBRL (PTAX) | | | | | | | | | |

## Appendix 9 – R Square

| | R Square | R Square Adjusted |
|---|---|---|
| 9. Perceived Timeline to Adopt XBRL (PTAX) | 0.658 | 0.647 |

## Appendix 10 – F Square

| | 1. Mgt Innovativeness (MI) | 2. Mgt Knowledge (MK) | 3. Cost (CO) | 4. Int Knowledge (IK) | 5. Compatibility (CM) | 6. Relative Adv (RA) | 7. Ex Pressure (EP) | 8. Ex Support (ES) | 9. Perceived Timeline to Adopt XBRL (PTAX) |
|---|---|---|---|---|---|---|---|---|---|
| 1. Mgt Innovativeness (MI) | | | | | | | | | 0.044 |
| 2. Mgt Knowledge (MK)_ | | | | | | | | | **0.015** |
| 3. Cost (CO) | | | | | | | | | **0.001** |
| 4. Int Knowledge (IK) | | | | | | | | | 0.085 |
| 5. Compatibility (CM) | | | | | | | | | 0.124 |
| 6. Relative Adv (RA) | | | | | | | | | **0.016** |
| 7. Ex Pressure (EP) | | | | | | | | | 0.095 |
| 8. Ex Support (ES) | | | | | | | | | 0.133 |
| 9. Perceived Timeline to Adopt XBRL (PTAX) | | | | | | | | | |

## Appendix 11 – Path Coefficient (Mean, STDEV, T-Values, P-Values) (One Tail Test)

| | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (\|O/STDEV\|) | P Values |
|---|---|---|---|---|---|
| 1. Mgt Innovativeness (MI) -> 9. Perceived Timeline to Adopt XBRL (PTAX) | 0.306 | 0.306 | 0.112 | 2.731 | 0.003 |
| 2. Mgt Knowledge (MK)_ -> 9. Perceived Timeline to Adopt XBRL (PTAX) | 0.213 | 0.196 | 0.113 | 1.877 | 0.030 |
| 3. Cost (CO) -> 9. Perceived Timeline to Adopt XBRL (PTAX) | -0.041 | -0.056 | 0.093 | 0.445 | 0.328 |
| 4. Int Knowledge (IK) -> 9. Perceived Timeline to Adopt XBRL (PTAX) | 0.275 | 0.288 | 0.076 | 3.617 | 0.000 |
| 5. Compatibility (CM) -> 9. Perceived Timeline to Adopt XBRL (PTAX) | -0.240 | -0.252 | 0.053 | 4.516 | 0.000 |
| 6. Relative Adv (RA) -> 9. Perceived Timeline to Adopt XBRL (PTAX) | 0.123 | 0.143 | 0.099 | 1.236 | 0.108 |
| 7. Ex Pressure (EP) -> 9. Perceived Timeline to Adopt XBRL (PTAX) | 0.304 | 0.290 | 0.078 | 3.912 | 0.000 |
| 8. Ex Support (ES) -> 9. Perceived Timeline to Adopt XBRL (PTAX) | -0.349 | -0.321 | 0.126 | 2.763 | 0.003 |

## Appendix 12 –The PLS3 Alogrithm Results